VOL. LXXXV PART FIVE

JOURNAL OF THE ROYAL HORTICULTURAL SOCIETY

MAY 1960

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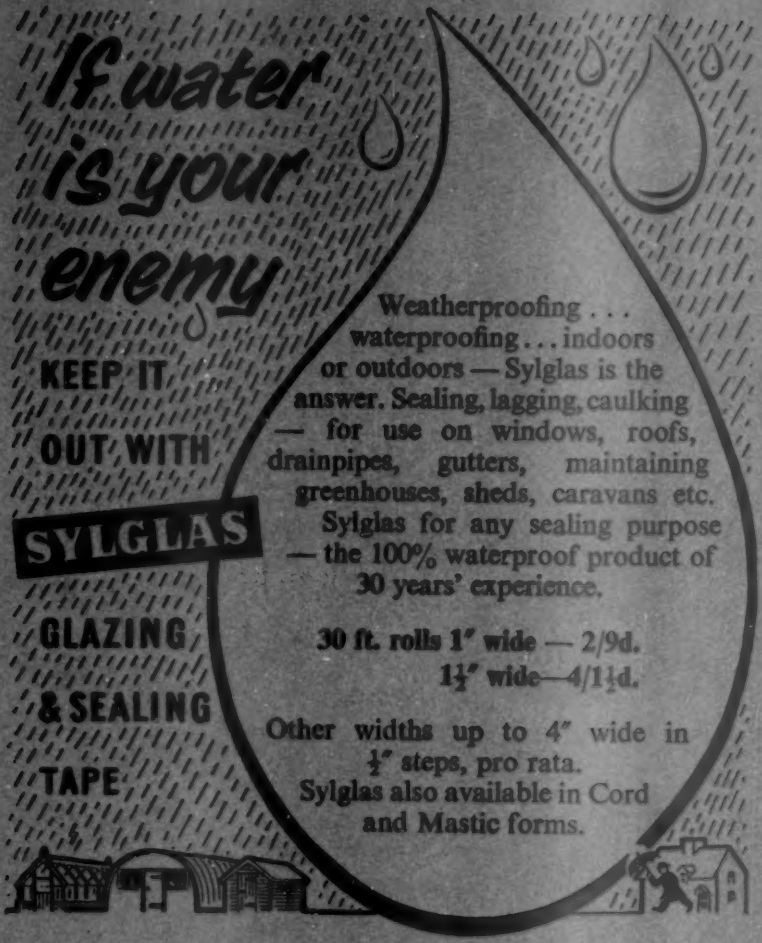
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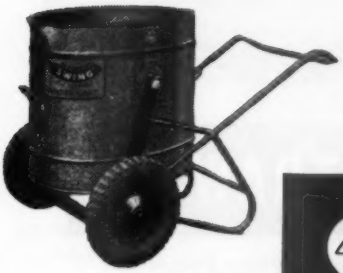

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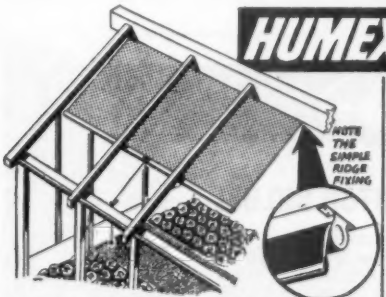

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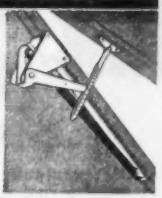

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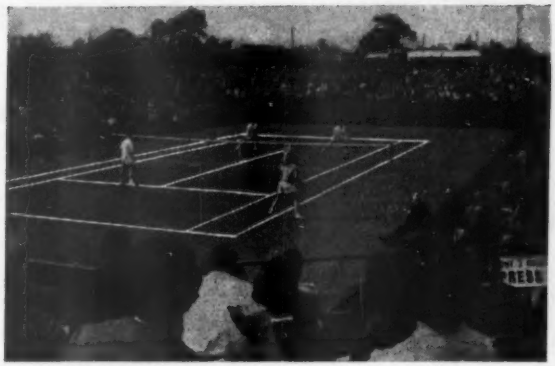

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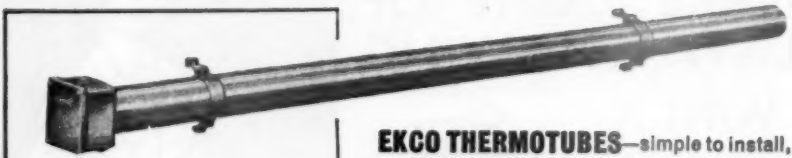

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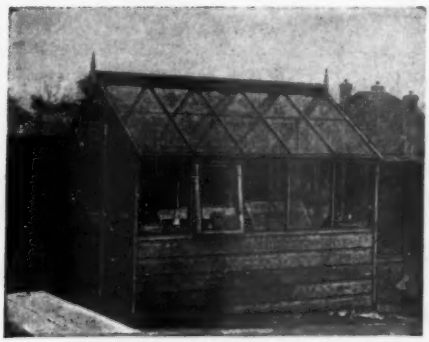

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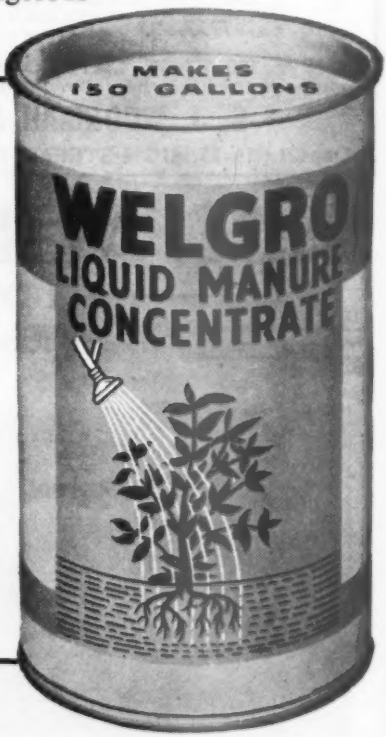

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JOURNAL OF THE ROYAL HORTICULTURAL SOCIETY

VOL. LXXXV PART FIVE

May 1960

THE SECRETARY'S PAGE

ANNOUNCEMENTS—MAY AND JUNE

Shows

TUESDAY, May 3 12.30 P.M. to 6 P.M. WEDNESDAY, May 4 10 A.M. to 5 P.M.	Fortnightly Flower Show and National Rose Society's Competition, in the Old Hall. Rhododendron Show in the New Hall.
TUESDAY, May 24 to FRIDAY, May 27	Chelsea Show.

For details see pp. 203–205.

THURSDAY, June 9 12 NOON to 6 P.M. FRIDAY, June 10 10 A.M. to 5 P.M.	British Iris Society's Show in the New Hall.
TUESDAY, June 14 12 NOON to 6 P.M. WEDNESDAY, June 15 10 A.M. to 5 P.M.	Fortnightly Flower Show, Flowering Tree and Shrub Competition. Cactus and Succulent Competition for Amateurs, British National Carnation Society's Competition and Geranium Society's Competition, in the New Hall.
TUESDAY, June 28 12 NOON to 6 P.M. WEDNESDAY, June 29 10 A.M. to 5 P.M.	Fortnightly Flower Show and Cactus and Succulent Society's Competition, in the New Hall.

Lectures

TUESDAY, May 3, at 3 P.M. "National Trust Gardens", by MR. G. S. THOMAS.

TUESDAY, June 14, at 3 P.M. "Tree Paeonies", by SIR FREDERICK STERN, O.B.E., M.C., F.L.S., V.M.H.

TUESDAY, June 28, at 3 P.M. "Weather and the Garden", by MR. L. P. SMITH, B.A.

Demonstrations at Wisley—The following demonstration will be given at Wisley, that on the second day being a repetition of that given on the first.

May 11–12. Summer Pruning of Shrubs. (Commencing at 2 P.M.)

International Orchid Conference—The Third World Orchid Conference, which is being sponsored jointly by the American Orchid Society, the British Orchid Growers' Association and The Royal Horticultural Society, will be held in London in May and June. The first conference was held in St. Louis, Missouri, U.S.A., in 1954, and the second in Hawaii in 1957.

The exhibition of orchids arranged in connection with the Conference will be at Chelsea Show on Tuesday, Wednesday, Thursday and Friday, May 24–27, and the Conference will be held in the following week on Monday, Tuesday, Wednesday and Thursday, May 30 and 31, June 1 and 2. Excursions have been arranged for Friday and Saturday, May 27 and 28 and Friday, Saturday and Sunday, June 3, 4 and 5.

A joint committee of the three sponsoring bodies has arranged a comprehensive programme covering a wide range of subjects of interest to amateur and professional orchid growers, and orchid specialists from Australia, Belgium, Brazil, Ceylon, Colombia, England, France, Germany, Holland, Japan, Malaya, South Africa, Sweden, United States of America and Venezuela have accepted invitations to deliver papers.

Anyone who wishes to attend the Conference should write without delay to The Secretary, The Third World Orchid Conference, c/o The Royal Horticultural Society, Vincent Square, London, S.W.1, for a Programme as all arrangements need to be completed early in May.

Gardeners' Sunday—Many gardens will be open to the public on Sunday, May 1, and Sunday, June 26, in aid of the Gardeners' Royal Benevolent Society and the Royal Gardeners' Orphan Fund. Particulars are given in a booklet which may be obtained from The Organiser, Gardeners' Sunday, Four Winds, Seale, Farnham, Surrey, price 1*s*., post free.

R.H.S. Journal—The issues of the JOURNAL for August and September 1959 are in short supply. It would be appreciated if Fellows who no longer require their copies would kindly forward them to The Secretary, The Royal Horticultural Society, Vincent Square, London, S.W.1.

ARRANGEMENTS FOR CHELSEA SHOW, 1960

Chelsea Show will, as usual, be held in the grounds of the Royal Hospital, Chelsea, London, S.W.3.

Private View – There will be a Private View on Tuesday, May 24, from 8.30 A.M. to 8 P.M. Admission may be gained only on *surrender* of the detachable parts of Fellows' and Associates' tickets. For details please refer to the paragraph relating to Fellows' and Associates' tickets below.

In no circumstances, by payment or otherwise, can extra admissions or re-entry to the Private View be allowed.

Dates of Show – The Show will be held on Wednesday, Thursday and Friday, May 25, 26 and 27.

Times – Fellows and Associates

Fellows, Associates, and holders of Fellows' Transferable tickets will be admitted free of charge during the following periods:

Wednesday, May 25	8.30 A.M. to 8 P.M.
Thursday, May 26	8.30 A.M. to 8 P.M.
Friday, May 27	8.30 A.M. to 5 P.M.

The Public

The charges for admission will be as follows:

Wednesday, May 25	8.30 A.M. to 8 P.M.	– £1
Thursday, May 26	8.30 A.M. to 8 P.M.	– 10*s.*
Friday, May 27	8.30 A.M. to 12 NOON	– 5*s.*
	12 NOON to 5 P.M.	– 2*s.* 6*d.*

In no circumstances can admission be gained by the public at any time on Tuesday, May 24.

Admission of Children – Children under five years of age cannot be admitted. The charge for the admission of children of five years and over will be the same as for adults.

Parties – No reduction in the price of admission can be made for parties of visitors, but tickets may be obtained beforehand to save trouble on arrival. Application, accompanied by a remittance to cover the cost of the tickets required, should be made to the Secretary, The Royal Horticultural Society, Vincent Square, London, S.W.1, early in May. Such applications *must* reach the Secretary not later than the first post on Friday, May 20.

Fellows' and Associates' Tickets – A Fellow subscribing 4 guineas annually receives 1 non-transferable and 5 transferable tickets. The non-transferable ticket has two *detachable* parts which will admit the Fellow and one other person to the Private View on Tuesday, May 24.

A Fellow subscribing 3 guineas annually receives 1 non-transferable and 2 transferable tickets. The non-transferable ticket has two *detachable* parts which will admit the Fellow and one other person to the Private View on Tuesday, May 24.

A Fellow subscribing 2 guineas annually receives 1 transferable ticket. This ticket has a *detachable* part which will admit only the Fellow to the Private View on Tuesday, May 24.

An Associate receives 1 non-transferable ticket. This ticket has a *detachable* part which will admit only the Associate to the Private View on Tuesday, May 24.

Each detachable part referred to above will admit *only once* to the Private View. Each Fellow's ticket, whether non-transferable or transferable, will admit one person at any time when the Show is open on Wednesday, Thursday, and Friday, May 25, 26 and 27, but the non-transferable ticket may, of course, be used only by the Fellow to whom it is issued. An Associate's ticket may be used only by the Associate to whom it is issued.

Transferable tickets may not be left at the turnstiles for collection by persons visiting the Show later, but may be posted at the Post Office in Main Avenue.

Catering – It is regretted that it is not possible to provide set luncheons and teas, but buffets for the service of light refreshments will be available. There will also be separate enclosures for the service of alcoholic beverages.

Post Office & Telephones – A Post Office for the transaction of ordinary Post Office business will be found in Main Avenue, as will also several Public Telephone Boxes.

Railway Inquiries – British Railways will have an inquiry bureau in the Show, situated in Main Avenue.

Band – The Band of H.M. Grenadier Guards will, by courtesy of the Officer Commanding, play each afternoon in the Ranelagh Gardens, where chairs are provided.

Cloakroom – A cloakroom at which bags, parcels, etc., may be deposited will be situated in Main Avenue.

Catalogue – An official Catalogue of the Show will be on sale in the Grounds, price 1*s*. 6*d*. It will not be available before the Show opens.

Bath Chairs – The arrangements for the admission of bath chairs will be as follows:

On Tuesday, May 24, Fellows and Associates in bath chairs will be admitted between 8.30 A.M. and 8 P.M. on presentation of tickets for the Private View. There will be a charge of 5*s*. for each chair, and that charge will cover one attendant.

On Wednesday, May 25, bath chairs will be admitted only between 8.30 A.M. and 12 NOON on presentation of Fellows' or Associates' tickets, or on payment of £1 for the occupant of the chair. There will also be a charge of 5*s*. for the chair, and that charge will cover one attendant.

On Thursday, May 26, bath chairs will be admitted only between 8.30 A.M. and 12 NOON on presentation of Fellows' or Associates' tickets, or on payment of 10*s*. for the occupant of the chair. There will also be a charge of 5*s*. for the chair, and that charge will cover one attendant.

On Friday, May 27, bath chairs will be admitted only between 8.30 A.M. and 12 NOON on presentation of Fellows' or Associates' tickets, or on payment of 5*s*. for the occupant of the chair. There will also be a charge of 5*s*. for the chair, and that charge will cover one attendant.

The Society cannot arrange for the provision of bath chairs, but they may be hired from Messrs. Reselco Invalid Carriages Ltd., 262 King Street, London, W.6. Chair attendants cannot be supplied.

TRANSPORT

Visitors travelling by car, taxi or coach should alight at the Embankment entrance. Cars and coaches may be parked in Battersea Park (entrance just south of Chelsea Bridge). Visitors travelling to London will find the following Railway and Bus Services of London Transport operating from the Main Line Termini:

CANNON STREET (*Railway*). District Line direct to Sloane Square. (*Bus*) Number 13 to Charing Cross, thence by Number 11 to Lower Sloane Street, Pimlico Road.

CHARING CROSS (*Railway*). District Line direct to Sloane Square. (*Bus*) Number 11 to Lower Sloane Street, Pimlico Road.

EUSTON (*Railway*). Northern Line to Charing Cross, thence by District Line to Sloane Square. (*Bus*) Number 77 to Whitehall, thence by Number 11 or 39 to Lower Sloane Street, Pimlico Road.

FENCHURCH STREET (*Railway*). Tower Hill direct to Sloane Square. (*Bus*) Number 10 to Victoria, thence by Number 11, 39 or 46 to Lower Sloane Street, Pimlico Road.

KING'S CROSS AND ST. PANCRAS (*Railway*). Piccadilly Line to Leicester Square, thence by Northern Line to Charing Cross, thence by District Line to Sloane Square. Or Circle Line direct to Sloane Square. (*Bus*) Number 77A to Whitehall, thence by Number 11 or 39 to Lower Sloane Street, Pimlico Road.

LIVERPOOL STREET (*Railway*). By Circle Line direct to Sloane Square. (*Bus*) Number 11 to Lower Sloane Street, Pimlico Road.

LONDON BRIDGE (*Railway*). Northern Line to Bank, thence by District Line from Monument to Sloane Square. (*Bus*) Number 10 to Victoria, thence by Number 11, 39, or 46 to Lower Sloane Street, Pimlico Road.

MARYLEBONE (*Railway*). Bakerloo Line to Paddington, thence by Circle Line to Sloane Square. (*Bus*) Number 2, 30 or 74 from Baker Street to Marble Arch, Park Lane, thence by Number 137 to Chelsea Bridge Road, Royal Hospital Road.

PADDINGTON (*Railway*). Circle Line direct to Sloane Square. (*Bus*) Number 36 or 36A to Marble Arch, Park Lane, thence by Number 137 to Chelsea Bridge Road, Royal Hospital Road.

VICTORIA (*Railway*). District Line direct to Sloane Square. (*Bus*) Number 11, 39, or 46 to Lower Sloane Street, Pimlico Road.

WATERLOO (*Railway*). Northern or Bakerloo Line to Charing Cross, thence by District Line to Sloane Square. (*Bus*) Number 46 to Lower Sloane Street, Pimlico Road.

BAKER STREET (*Railway*). Circle Line direct to Sloane Square. (*Bus*) Number 2, 30, or 74 to Marble Arch, Park Lane, thence by Number 137 to Chelsea Bridge Road, Royal Hospital Road.

A plan giving approach routes to the Show and Parking places may be obtained on application to The Secretary.

NOTES FROM WISLEY

N. K. Gould

MANY Fellows and their friends who make long journeys to London to visit the important spring flower shows, such as the Rhododendron Show and the Chelsea Show, like to take the opportunity afforded to visit Wisley, and the present month is most favourable for a visit, for not only are the flowers more numerous and varied than at any other season, but the fresh green foliage of the many different deciduous trees and shrubs is in itself a source of pleasure. Things of special interest at this time of the year are the rhododendrons, azaleas, magnolias and primulas in the Wild Garden and on Battleston Hill, lilacs and crabs in Seven Acres and Howard's Field, the later Japanese cherries in several parts of the Gardens, and rock-garden plants.

Most visitors entering the Gardens proceed along the terrace, now gay with tulips, and turning left make their way straight to Battleston Hill, and long before reaching the highest part they will be aware of the massed colour of the rhododendrons and azaleas there. The great genus *Rhododendron* is remarkable for the large number both of hybrids and species it provides for garden decoration, and, the soil at Wisley being particularly favourable to their development, they are extremely well represented here. It is unfortunate that our rainfall is so low, for all of these plants could easily take twice as much or more, but the arrangements for watering have been extended so as to meet the needs of most and will doubtless be improved in future.

Entering Battleston Hill by the broad green walk the visitor finds on the left the Trial beds of hardy hybrid rhododendrons suitable primarily for garden decoration. The plants included in the Trial remain here for a period of years during which their development and behaviour can be recorded and in the course of time they either receive awards, or, if they do not come up to the required standard, they are discarded and replaced by new ones. In the Trial will be found some very old varieties whose performance has never been surpassed by more modern kinds. Many of the old ones which arose from crosses between a few hardy species made in the last century make compact bushes with very good foliage, and they flower at the tip of almost every growth annually. With the passing of the years many of them grow into tall and quite handsome trees still retaining a reasonably good shape. In recent years many more species which have come to us from the expeditions of the early years of the present century into western China have afforded fresh material for breeding and an enormous number of hybrids have been raised, not all of them of very high quality. Perhaps the greatest benefit of this extended breeding programme has been the provision of early- and late-flowering hybrids which have tremendously extended the season, but unfortunately some of the best of these are not completely hardy and are thus only suitable for the

most favoured gardens. The visitor intent upon making a list of varieties for his own use may rest assured that those varieties in the Trial which have received the Society's awards are hardy ones.

On the opposite side of the Broad Walk is a sheltered glade devoted almost entirely to the dwarf-growing more or less evergreen azaleas sometimes collectively described as Japanese azaleas, although they are not all entitled to the epithet. In this great collection the majority are forms of *Rhododendron kiusianum* many of which were brought to England through the enthusiasm of that great collector ERNEST H. WILSON, who, when travelling in Japan, came across nursery gardens in which variants of that species had long been cultivated and were highly esteemed. He selected fifty for introduction, and these, together with more recently developed varieties, can be seen at Wisley. All are compact spreading bushes with neat foliage and they cover themselves in the spring with little flowers of white, pink, rose or crimson. Some other groups represented here are the hybrids of *R. kaempferi* and various other groups such as the so-called Vuykiana and Wada Hybrids, in the ancestry of which several different species have been concerned.

Higher up the hill there are extensive beds of deciduous azaleas, among which the large-flowered group known as Knaphill Hybrids are prominent. Many have been raised at Wisley and those of our seedlings which have been considered worthy to receive awards have been named after rivers in the British Isles.

Reaching the crest of the hill one comes to the section occupied by the rhododendron species arranged according to their botanical classification. Compared with some of the more spectacular hybrids, some of these may not seem very showy, but nevertheless nearly every species of rhododendron when seen freely flowering is a plant of considerable character and charm. For example, there is probably no hybrid which has quite the elegance of *R. schlippenbachii* and none which has the lovely grey foliage of *R. concatenans*, while among the species of the *Azalea* series one finds some with dainty flowers possessing a fragrance completely unrivalled by any hybrid. Since these beds were planted the spaces between the rhododendrons have been used to accommodate many other kinds of plant and this extension of the planting scheme provides colour and interest nearly all the year round. Lilies particularly appreciate this association with rhododendrons which shelters their young growths for the spring and offers their tall stems support at flowering time. Heathers make interesting material for edging the beds, and small bulbous plants, such as snowdrops and crocus species, thrive and increase without fear of disturbance.

Some other attractive plants to be found in this part of the Gardens are the deciduous magnolias including *M. sinensis* and *M. wilsonii*, both with pendent white flowers, and *M. tripetala* freshly clad in palest green and now expanding huge starry flowers, *Davidia involucrata*, the Handkerchief Tree in which a small cluster of inconspicuous flowers is enclosed within a pair of white crinkled bracts, and *Halesia monticola* a species of Snowdrop Tree of rather more erect growth than the more familiar

H. carolina and remarkable for its large papery flowers clustered along the branchlets.

On Weather Hill many different ornamental trees are to be found and some of those in flower now are *Prunus cerasus* var. *rhexii* which displays a succession of very regular double white flowers. Not far away is a large group of *Cytisus battandieri* which has dense spikes of golden melon-scented flowers, some good specimen laburnums and a single tree of *Laburnocytisus adami*, the remarkable graft-chimaera formed of tissues of common laburnum and a purple-flowered shrub named *Cytisus purpureus*, which came into being many years ago when the two were grafted together by a Parisian gardener. Its flowers, of a curious brownish pink colour, always attract attention and occasionally a shoot bearing the true flowers and leaves of one or the other of the component species may be seen to arise.

During May there will be plenty of colour in every part of the Wild Garden. The lofty hedges of old hybrids of *Rhododendron ponticum* while serving as effective wind breaks give a brave show of flowers best seen from the top walk of the Rock Garden. Among them one can see tall specimens of the several kinds of *Enkianthus* with their slender branched stems clothed with fresh pale leaves and bunches of creamy white variously striped bells, *Cornus florida rubra* in which every twig carries a bunch of rosy bracts, *Styrax japonica* from whose branches hang myriads of white, snowdrop-like blooms, and *S. obassia* with enormous leaves almost hiding its delicate white sprays of flowers.

The Vegetable Trial Ground always provides something fresh for those who are interested in this branch of gardening. The most unusual feature at present is the trial of varieties of rhubarb in which no fewer than eighty-three different kinds are represented. This is one of the permanent trials comprising many old and familiar kinds grown for comparison with novelties which can be added as they are introduced. The trial is being judged this month and it will be interesting to see what opinion is formed of some of the newer varieties which certainly look promising. The variety 'Timperley Early' is noticeable for its very early growth, the young stalks having a bright crimson colour which passes to green later in the season. 'Canada Red' and 'Crimson Queen' are interesting in possessing red fleshed stalks. Two varieties of very superior quality for the table are 'Valentine 'and 'Macdonald', both of which are of Canadian origin and have already received high awards from the Society. The very old variety 'Hawke's Champagne' which likewise received an award some years ago is still regarded as one of the best second early varieties.

No other trials of vegetables will yet be approaching maturity, but among those coming along there are broad beans, broccoli, cabbage, cauliflower, celery and leeks.

INVITED TRIALS, 1961-62

The Royal Horticultural Society will carry out at its Gardens during 1961–62 the following trials, for which entries are now invited:

FLOWERS

Bergenia (3 plants of each variety).
Iris sibirica (3 rhizomes of each variety).

VEGETABLES

Under Dutch Lights and Frames

Lettuce, excluding outdoor varieties (½ ounce of seed of each variety).

Conditions for entry to the trials

1. All entries must be made on the appropriate forms obtainable from The Director, The Royal Horticultural Society's Gardens, Wisley, Ripley, Woking, Surrey. One form should be completed for each entry. Entrants making application for entry forms are requested to state the number of forms required and whether the forms are needed for flowers or vegetables.

2. When the form relates to a plant normally propagated from seed the entrant must certify on the form either:

(*a*) that the variety or strain has been raised or developed by him
or (*b*) that the variety or strain was, or is about to be, introduced by him to British Commerce.

The entrant must also supply sufficient particulars of the history of the variety or strain to substantiate his certificate, but such particulars will not be published by the Society without the sender's consent.

3. Entry forms must be completed and returned to Wisley not later than August 31, 1960. Entries received after that date cannot be considered for inclusion in the trials.

4. Plants and seeds *should not be sent* until the entrant receives notification that his entry has been accepted.

5. In the event of too many entries being submitted for a particular trial the Council of The Royal Horticultural Society reserves the right to scale down the number of entries received.

CYCLAMENS

Hon. Lewis Palmer, F.L.S., V.M.H.

(*Talk given after the Annual General Meeting of the Alpine Garden Society on November 6, 1959, MR. C. H. HAMMER in the Chair*)

WHEN one talks about *Cyclamen* it is as well to make it clear at the outset what series of names one proposes to use. For the purposes of this talk I propose to stick to the names used in the Supplement to the *R.H.S. Dictionary*.

I suppose no genus of plants has been in a greater degree the subject of the taxonomist's sport of nomenclatural general post, to the bewilderment of mere gardeners. This confusion of names is in some ways curious because in *Cyclamen* the species are extremely well defined and there are no areas of overlap where one species appears to merge into another with a wealth of intermediates—as, for instance, in *Agapanthus*—giving rise to great difficulty in determining the boundaries between species. In defence of the taxonomists may it be said that the collections of cyclamen material in the great herbaria are relatively meagre; and one desiccated cyclamen anyway looks very much like another; the colour, markings and substance of the leaves largely disappear on drying, only the shape remaining. Even the flowers when squashed are much more like each other than they are when alive.

Of the fifteen species enumerated in the Dictionary only seven in nature have a considerable range, the remaining eight are now confined to a restricted habitat. I suppose this is because *Cyclamen* is a very ancient genus which has had to adapt itself to many changes of climate through a long period of geological time.

The seven which still inhabit a large area are *Cyclamen europaeum*, *C. neapolitanum*, *C. graecum*, *C. africanum*, *C. persicum*, *C. repandum* and *C. orbiculatum*. These as might be expected are very variable and show a considerable range of forms. (In fact in the case of *C. orbiculatum* and *C. graecum* some forms have been given specific rank by some authors, for instance *C. hiemale* and *C. coum* in the case of *C. orbiculatum* and *C. pseudograecum*, and *C. maritimum* in the case of *C. graecum*; but the more generally accepted view now is to regard all those forms as geographical variations of one species.) Of the eight species confined to a restricted habitat, three are confined to an island, viz. *C. balearicum*, *C. cyprium*, *C. creticum*; one to an island of relatively fertile country surrounded by desert, *C. rohlfsianum*, and the remaining four, viz. *C. cilicium*, *C. pseudibericum*, *C. alpinum* and *C. libanoticum* to a more or less isolated mountain system.

That cyclamen is a very ancient family is also indicated by the chromosome counts of the various species. These ascend from 2n = 20

in *C. repandum* to 2n = 96 in *C. rohlfsianum*. Although there are three groups with the same number of chromosomes that, theoretically, might be expected to hybridize within the group, yet hybrids between two species of cyclamen are unknown (or at least unrecorded) in nature, even where two species of the same chromosome number and flowering period grow together, as happens with *C. neapolitanum* and *C. europaeum*. In cultivation the best-known hybrid name is *C.* × *atkinsii*. This was published in 1852 and claimed to belong to a hybrid between *C. persicum* and *C. orbiculatum*, a cross which is, cytologically, highly improbable. Certainly the contemporary illustration suggests nothing more than a fine form of *C. orbiculatum*. HILDEBRAND rather confused matters by attributing the name *C.* × *atkinsii* to a cross between *C. orbiculatum* and *C. orb.* var. *coum* which, in fact, is a much more probable parentage for the plants which pass under this name in commerce. *C.* × *hildebrandii* is a hybrid between *C. neapolitanum* and the tetraploid *C. africanum*; and is probably the only well-authenticated hybrid between two species. MRS. SAUNDERS in her study of the genus published in the *Alpine Garden Society Bulletin* for March 1959 also reports a hybrid between *C. creticum* and *C. repandum*, which I have not seen. In this connection I would like to mention a plant recently shown by MRS. SAUNDERS which was raised from seed of *C. europaeum*, but which exhibited such intermediate characters that it might well have been a hybrid between *C. europaeum* and *C. neapolitanum*.

There are many fascinating problems to an enquiring mind about cyclamen. Why is it that one species, and only one, *C. rohlfsianum*, sticks its anthers out of the corolla tube in a cone, like the North American cousins of cyclamen the dodecatheons? Why is it that one species, and one species only, *C. graecum*, has stout contractile roots to pull the corm down into the earth? Why is it that one species, and one species only, *C. persicum*, does not wind up its peduncle like a watch-spring after flowering? What is the object of this winding up of the peduncle so that the ripening capsules are brought directly down on top of the mother corm? Indeed, the cyclamen has recognized the inconvenience of this arrangement, because it has had to supply a blob of sweet honey on each ripe seed to induce the questing ants to seize it, and carry it away and drop it at a distance after consuming the honey. Perhaps this is also what makes cyclamen seed capsules so attractive to mice. But there must be some compelling purpose served by this coiling of the peduncle because all the species of cyclamen have arrived at it, except *C. persicum*; but as it were, independently, for they have arrived at it in two different ways. As MRS. SAUNDERS pointed out recently *C. graecum* and *C. rohlfsianum* coil from the bottom upwards, while the others coil from the top downwards. It may have no connection, but it is worth noting that *C. graecum* and *C. rohlfsianum*, the two species that coil from the bottom upwards, are the two species with the highest chromosome counts, 84 and 96 respectively. The species with the next highest chromosome count (excluding *C. africanum*

which is probably a tetraploid) is *C. persicum* with 48 chromosomes, and that does not coil its peduncle at all. The species with lower chromosome counts all coil their peduncles from the top downwards. This is a most intriguing subject for speculation but I am unable to suggest any plausible solution to the problems.

Only five species are generally regarded as bone hardy, viz. *C. europaeum*, *C. neapolitanum*, *C. repandum*, *C. orbiculatum* and *C. cilicium*. You may find it sometimes said that *C. cilicium* is not too hardy. I have grown it for twenty years out of doors and it flourishes better like that than in a pot. A friend was once travelling by car in Turkey and he passed a sheet of *C. cilicium* in flower. He stopped and dug up some corms and put them in the boot of his car. Shortly after, the car broke down and had to be left at a Turkish garage. Three months later my friend went to collect his car and found the cyclamens still in the boot, so he sent them to me. The parcel arrived in the month of January: desiccated flowers, leaves, roots, and all. I put the plants straight into the open ground. That was six or seven years ago. The plants are flowering merrily at this moment. I refuse to believe that this is not a hardy species (Fig. 62).

Some of the others are, I think, hardier than is generally supposed, if they are given choice positions. *C. graecum* does perfectly well on my dry chalk in full sun. *C. cyprium* also has survived many winters under similar conditions. *C. pseudibericum* lived and flourished for many years outside in MR. BOWLES's garden at Myddelton House. *C. libanoticum*, *C. balearicum* and *C. creticum* have all survived a winter or two outside with me, and flowered in the spring, but it is too early to say that they will go on doing it. *C. rohlfsianum* and *C. persicum* I would not expect to be hardy though as I have not yet tried them outside I cannot say for certain.

C. africanum is a doubtful case. For many years I believed I was growing it in the open. But I now think these plants are the hybrid *C.* × *hildebrandii*, and I have not tried genuine *C. africanum* outside.

Of *C. alpinum* I cannot speak. The late MR. E. A. BOWLES was always on the look-out for this species which he was confident would be rediscovered. It has only recently been reintroduced to cultivation by DR. PETER DAVIS under his numbers 25618 and 25579. These were sent home under the name *C. orbiculatum* var. *alpinum* and have been shown at Vincent Square by MRS. SAUNDERS and SIR FREDERICK STERN. The plants correspond very closely in nearly all particulars with the description and figures of *C. alpinum* in HILDEBRAND's monograph. Whether HILDEBRAND was justified in giving it specific rank or not is a question for the taxonomists to decide, but I think it will soon be recognized that DR. DAVIS has been instrumental in reintroducing HILDEBRAND's plant to cultivation in the same way that he reintroduced *C. pseudibericum*. Up to quite recently the entire stock of *C. pseudibericum* in cultivation was descended from a single corm sent to Messrs. Van Tubergen from Smyrna about the turn of the century. As its habitat had never been

discovered some authors maintained that it did not exist in nature, and was a natural hybrid between *C. libanoticum* and *C. repandum*. They have now been proved to be wrong, for DR. DAVIS has discovered it growing in abundance in the Amanus Mountains, and has sent home a large number of plants which, unlike the original stock, exhibit a wide range of variation (Fig. 60).

There is another, at present fabulous, cyclamen, which I might mention at this point and that is *C. mirabile*, named and described by HILDEBRAND, but never since known in cultivation. It was apparently close to *C. cilicium* and came in the same lot as the original corm of *C. pseudibericum* sent to Van Tubergen from Smyrna. Its distinguishing feature was that the markings on the upper surface of its young leaves instead of being a dull white were bright red. As the leaves matured the red colour on the upper surface of the leaves disappeared. Naturally we have all been scrutinizing the plants of *C. cilicium* sent home by DR. DAVIS in the hope that this plant may turn up again. Edinburgh Botanic Gardens have one single plant under No. D and P. 26004B, which may possibly turn out to be this species. Like HILDEBRAND's solitary plant it has hitherto declined to set seed.

There is one further plant I would like to mention. MR. BOWLES had this plant which he used to call "the pink Balearicum": unfortunately there is no record of the source of his plant. MR. MOUNTFORT has collected the same plant on the mountains of the Island of Rhodes. When MR. MOUNTFORT exhibited it, it was referred to *C. repandum* on account of its protruding style. But it is most unlike *C. repandum*, as it occurs in other parts of Greece, and Rhodes is very near the limit of the range of *C. repandum*. Indeed the only record of *C. repandum* from Rhodes in the literature turns out to be a specimen of this plant. It has white flowers but there is also a pink form. It may be that further investigation will reveal yet another relict species confined to a single island. There is an excellent photograph of it in MRS. SAUNDERS' conspectus of the genus (*A.G.S. Bull.*, March 1959, p. 28).

About the cultivation of cyclamen I feel quite incompetent to talk to such an expert audience as this. Wherever possible I try to grow my cyclamens in the open ground or at least in beds made up under the staging in a cold house. Some like *C. europaeum*, *C. repandum* and *C. creticum* appear to want complete shade from the sun; others like *C. graecum* and *C. cyprium* seem to do better in full sun. The rest thrive best in partial shade and seem to be indifferent within fairly wide limits to the amount of sun they get. All like a good dressing every year with leaf mould and a little bone meal. With the exception of *C. graecum*, which has long stout contractile roots growing from the bottom of the corm, they are all well adapted to cultivation in pots; but I find that, where they are not confined in pots, they tend to put out more vigorous and larger leaves. When I grow them in pots I stand the pots in a tray full of sand and give them no water from above once the leaves or flowers appear above ground. After that I water by pouring the water

into the sand. Once their leaves die down I let the pots dry off completely and give no water until the growing season comes round again. A good baking in the summer seems essential to such species as *C. persicum*, *C. rohlfsianum*, *C. pseudibericum* and *C. libanoticum*. Without it they will only flower indifferently.

One of the joys of a collection of cyclamens is that you can have them in flower outside as well as inside for eleven months of the year. Only in the month of June is there no cyclamen in bloom. Quite early in July *C. europaeum* will start putting up one or two of its intensely fragrant blooms with the first of its round or heart-shaped leaves. Its flowering goes on sporadically until November. There are always a few blossoms showing, but never a mass at the same time on one plant. Of this cyclamen there is a pure white form but it is very rare. There is also a form of this cyclamen from a widely detached habitat on the shores of the Black Sea, which is given specific rank by SCHWARTZ under the name of *C. ponticum*, but I have never seen it.

The next to follow is *C. neapolitanum*, which starts to send up its flowers towards the end of August before the leaves appear. Unlike *C. europaeum* it sends up its flowers in profusion. An old corm may have anything from fifty to one hundred flowers standing out of the bare earth at once. The leaves appear a fortnight to three weeks after the flowers and are more variable in shape and markings than those of any other cyclamen. The late MR. BOWLES used to say that he would give half a crown to anyone who could find two plants among the many thousands in his garden with exactly similar leaves. I never heard of anyone winning that half-crown. The flowers, too, range from pure white to quite a deep cyclamen colour. I think the old story that this species was fragrant arose from the confusion of names between this species and *C. europaeum*, from which confusion even so august an authority as BENTHAM and HOOKER is not exempt. Undoubtedly the vast majority of the plants of *C. neapolitanum* in cultivation are quite without scent. But I have a few plants, collected at Ephesus, which have a distinct fragrance when the flowers first open, although they seem to lose it after about 24 hours. MR. BLANCHARD tells me he has a similar stock collected in Salonika. It would seem that at the eastern end of its range some races of this cyclamen have preserved some fragrance, but I have never found it in any plants from other parts. *C. neapolitanum* will maintain some flowers in bloom among its leaves until the end of October. *C. africanum* follows almost the same time-table, first raising its large flowers, white or pink with yellow anthers, on their long stems out of the bare earth in early September, to be followed by their giant leaves.

September and October will have also seen the flowering of *C. graecum* and *C. cyprium*, whether you have these in the open or in the Alpine House. *C. graecum* has all too brief a flowering period. On some plants the auricled flowers are up and out before the leaves, but only just before; in others the lovely dark green horny leaves with silvery markings appear first and the flowers form a neat little bunch emerging

from the centre of the patch of leaves, rather after the style of a Victorian posy (Figs. 64, 65). But there is no long succession here as there is in *C. neapolitanum* and *C. europaeum*, and the flowering period of *C. graecum* and its allies, *C. pseudograecum* and *C. graecum* Cyprus form, is usually over by the end of September. *C. cyprium* on the other hand will put up the first of its fragrant white, auricled flowers early in September, long before the leaves appear, and will continue producing a succession of flowers until the very dark green velvety leaves begin to appear in mid-October. In very dry situations it is sometimes even later. This year I had one plant that did not begin to flower till mid-October.

To this season also belongs the flowering of *C. rohlfsianum*, that very individual cyclamen from the Libyan desert. I call it individual because neither its corm, nor its leaves, nor its flowers are in the least like those of any other cyclamen. From every eye of its potato-like corm grow branches, from each of which there comes in September a tuft of dodecatheon-like flowers with the anthers protruding in a cone from the mouth, followed by its reniform crenulate, toothed leaves. I have never seen any but pink flowers on it, but the turn-back lobes of the corolla have a wonderfully beautiful veining which is not nearly so well marked on any other cyclamen.

Long before *C. neapolitanum* has finally faded, the running in the garden outside has been taken up by *C. cilicium*. The first of the *cilicium* group to appear are the two dwarf forms with leaves the size of a shilling, which are generally known, though I believe without authority, as *C. cilicium* var. *alpinum*. There are two of these forms in cultivation both collected by MR. E. K. BALLS under his numbers—628, which has almost white flowers and leaves with the ordinary *cilicium* markings, and 669a, which has pink flowers and leaves with markings more like *C. orbiculatum*. This latter form is illustrated, but not given a varietal name, in *Bot. Mag.*, N.S. 171, t. 307. Both these forms have regular *cilicium* flowers, except that they lack the purple spot at the mouth of the corolla tube. However, whatever their proper name may be, they come into flower towards the end of September, and a good fortnight or three weeks before most, but not all, forms of the typical plant. All forms of *C. cilicium* put up their flowers just in advance of the leaves. The flowers have the smallest mouth to the corolla tube of any cyclamen, and can usually be recognized at a glance by this character; their colour varies from white to quite a deep pink and they have no scent. *C. cilicium* will keep up the running in the outside garden until the end of November, when the long succession of forms of *C. orbiculatum* begins. The range of this cyclamen is so large in nature, extending as it does from Thrace to the Caucasus, and from Bulgaria to the Lebanon, that there are naturally many forms of it. Whether it is a case of the large leaves of "*C.* × *atkinsii*", the plain leaves of *C. coum*, or the zoned leaves of *C. hiemale* and *C. orbiculatum* proper, they all appear in September long before the flowers. These may be of any colour from white to deep crimson and begin appearing at the end of

November and go on through snow and frost until the end of March, brightening the winter months. In shape they are less graceful than other cyclamens, being somewhat squat and broad nor have they any scent, but they make up in charm for any shortcomings in form, and one is eternally grateful for their starry blooms, rather reminiscent of a miniature child's paper windmill, which do so much to cheer the months when there is little else in flower.

During the time that *C. orbiculatum* is holding the fort outside, *C. pseudibericum*, followed by *C. libanoticum* and *C. persicum*, will have been flowering in the cold house. *C. pseudibericum* has a very fragrant flower, in shape and markings somewhat like that of *C. orbiculatum*, only larger and held up on 6-inch stems rising straight up in the centre of the leaves instead of peeping out from their sides as in *C. orbiculatum*. There is a considerable variety of leaf-forms among the plants recently introduced by DR. DAVIS, as well as colour forms in the flowers, which has caused us to revise our ideas about the untypical uniformity of this species, which was previously only known from a single strain (Fig. 60). This untypical uniformity is also exhibited by *C. libanoticum*, whose broad-lobed fragrant flowers of a lovely shade of pink are perhaps the most beautiful of all cyclamen flowers. None of the recent collectors has succeeded in rediscovering the habitat of this cyclamen, and the stock we cultivate though constantly propagated from seed shows little or no variation between individuals, a circumstance most unusual in cyclamen. One cannot help wondering whether, when its natural habitat is rediscovered, we shall not find that it is equally variable with *C. pseudibericum*. Certainly the figures published by HILDEBRAND indicate more variability than we see today. However, we may be duly thankful that it is probably the most beautiful form of the species which we have in cultivation, for it would be difficult to imagine anything to surpass it (Fig. 61).

In contrast to *C. pseudibericum* and *C. libanoticum*, which are confined in nature to a very restricted habitat, *C. persicum* is a very wide-ranging species, and in consequence very variable. It puts up its long-legged fragrant flowers in the early spring. These are white or pink and are the ancestors of all the pot cyclamens of the florist's trade. I am never quite sure whether man improves plants when he starts breeding them. The pot cyclamens have developed a series of brilliant colours, but they have lost the grace of the wild species and its charming long-legged look, and, what is far worse, no trace of its delicious fragrance remains. Unlike most other cyclamens this species seems to enjoy growing with its corm slightly protruding from the surface of the soil. Of this cyclamen DR. PETER DAVIS has recently introduced a very charming dwarf pink form under his number 26818 (Figs. 56, 57).

The procession of the cyclamens is brought to an end with *C. repandum* and its close relatives, *C. balearicum* and *C. creticum*. The last two are of doubtful hardiness and are therefore usually grown under cover, in which case they flower earlier than does *C. repandum* in the

open; but where they will brave an English winter their flowers come out at the same time as *C. repandum*. They are both usually white, though a pink form of *C. creticum* exists. But while the long and graceful white flowers of *C. creticum* show up well above its matt dark green foliage, the rather insignificant flowers of *C. balearicum* are lost against the lovely silvery background if its leaves. Of all cyclamens I think *C. balearicum* has the most beautiful leaf, so heavily flecked with white as to give the whole leaf a silvery appearance. I have grown both these cyclamens out of doors but I cannot say they flourish exceedingly although hitherto they have survived. Quite different is their relative *C. repandum*, that cyclamen of which you may buy bunches, like bunches of violets, from street vendors if you visit Italy in April or May. And they are scarcely inferior to violets in their fresh fragrance. In many places in England, this cyclamen will grow with the same vigour as *C. neapolitanum*: but I find it rather more exacting. It starts to flower in April just as the long reign of *C. orbiculatum* is coming to an end, the leaves preceding the flowers, and remains waving its graceful deep coloured flowers among the primroses until the mounting heat of summer puts all cyclamen to sleep towards the end of May and brings the cyclamen year to an end.

THE UNIVERSITY OF LIVERPOOL BOTANIC GARDEN, NESS, WIRRAL, CHESHIRE

J. K. Hulme, N.D.H. (Director)

SOME sixty years ago the late MR. ARTHUR KILPIN BULLEY built a house and started to develop a garden at Mickwell Brow, Ness. This estate, with an endowment of £75,000, was presented to the University of Liverpool by MISS A. L. BULLEY in 1948, to be kept as a Botanic Garden as a "practical and fitting tribute" to the memory of her father.

The history of the development of the Garden is of great interest to all plant-lovers. The selection of the site itself was largely determined by A. K. BULLEY's devotion to plants. He had studied the local flora intensively and his mind turned to a consideration of plants native to other countries. Many, he was sure, would grow in British gardens. Thus began one of A. K. BULLEY's consuming interests in life and what in time proved to be, perhaps, his outstanding contribution to horticulture.

He wrote to missionaries and other people stationed in corners of the earth in which the range of temperatures was similar to those experienced in Britain, inviting them to co-operate by sending to this country seeds of the plants in their locality. Some were bound to reply that they were committed to as much work as they could humanly

manage, others promised to help and as they went on their missionary or commercial journeys gathered seed from the plants by the wayside. The seeds were duly received in this country, but the results were not wholly encouraging. "Ness", said MISS A. L. BULLEY, quoting her mother, "could quickly claim to possess the best international collection of dandelions to be seen anywhere."

The need for a specialist plant collector became obvious. GEORGE FORREST was recommended to MR. BULLEY for this work by PROFESSOR SIR ISAAC BAYLEY BALFOUR and in 1904 FORREST set out for Western China. This famous collector made seven expeditions in all. Five were supported by syndicates, of which MR. BULLEY was a member; the first two were supported solely by ARTHUR KILPIN BULLEY. Having launched GEORGE FORREST on his plant-collecting career in 1904, he was to do the same in 1913 for KINGDON WARD and in 1914 for MR. R. E. COOPER. In 1926 SIEHE was engaged to collect bulbous plants in Asia Minor. BULLEY also had shares in the expeditions of REGINALD FARRER, E. K. BALLS, COMBER, CLARENCE ELLIOT and GOETHE. Has any other single individual ever given so generously in support of plant-collecting expeditions?

A number of plants have been named in his honour, including *Primula bulleyana*, *Adenophora bulleyana*, *Iris bulleyana*, *Salvia bulleyana*, *Allium bulleyana* and others.

MR. BULLEY was the founder of Bees Ltd. and sections of the Garden at Ness were at one time developed as a commercial nursery. Certain inherent difficulties in the site limited development in this direction and in 1911 Bees Ltd. was transferred to the thousand-acres site at Sealand, where the firm continues to flourish. A market nursery filled in the vacuum left by the transference of Bees Ltd. until 1913, in which year MR. JOSIAH HOPE, was engaged as Head Gardener to wind up the market nursery and to replace it with a private garden.

The Wirral peninsula is a small strip of land between the Rivers Dee and Mersey. From the various vantage points on the peninsula one can obtain a good view of the Welsh hills across the Dee and the City of Liverpool on the opposite bank of the Mersey. Ness is situated in the southern part of the peninsula some nine miles from Chester and overlooks the Dee estuary. The air currents advancing from the south and south-west must pass over the Welsh hills and precipitation occurs over the higher relief obstacles, which have the effect of creating a "rain shadow" in south-west Wirral. Rainfall records for Neston between 1879 and 1942 show a maximum annual figure of 31·7 inches and minimum of 25·6 inches, with an average over the 73-year period of 28 inches per annum. The assumed average for Ness over this period is about 27·6 inches. It is obvious from these figures that this district is one of the driest on the west coast of the British Isles. There is a sharp increase in rainfall as one moves to other parts of the Wirral.

The mean seasonal temperature figures are more typical of a west-coast district. If comparisons are made with the Cheshire plain, an

example of an area further inland, we at Ness experience fewer and generally less severe frosts. This is not to say we are situated in a particularly favourable west-coast district. The influence of the Welsh hills is again apparent. The cold air rolling down the hillsides creates a number of frost pockets not very far away from Ness, and has the general effect in our location of lowering the temperatures a few degrees on some cold nights. That a number of species and trees and shrubs succeed with us, though they are not generally hardy, is not attributable to the single factor of milder winters. Instead a combination of conditions are seen to be operative such as the protection afforded by conifers and the very good drainage on the sandstone slopes. In the lower areas of the garden where the soil is considerably heavier and the drainage not so efficient we have found that hardy *Berberis*, *Cotoneaster*, and *Lonicera*, have on occasion been cut to ground level or killed outright. In these areas *Caryopteris* × *clandonensis* and *Senecio laxifolius* are difficult to keep through the winter. We do enjoy one favour of climate and that is that the prevailing wind takes the atmospheric pollution of Merseyside away from us and not towards us. This does not simply mean that the deposits of dirt and injurious chemicals on the plants are avoided. It means, too, that in the absence of industrial haze the sun breaks through more frequently and provides us with slightly drier winter days.

The topography of the site is typical of the Wirral peninsula. The house is built on a sandstone hill which protrudes sharply through drifts of marl and the garden extends in an irregular horse-shoe around it. The steep slopes of the hill are covered with a thin layer of poor sandy material which through the years has generally been covered by scrub vegetation. A number of attempts have been made to establish ornamental plants on parts of the slopes but when attention perforce became slight the scrub vegetation quickly reinvaded and set up competition too great for other plants. The bird and other wildlife which inhabited the scrub brought much satisfaction to the family in the house. This fact coupled with the natural barrier that the gorse, broom and brambles formed between the public and the house provided sufficient reasons why it should remain. It is felt today that the viewpoint from the top of the hill to the Dee estuary and the Welsh hills beyond is too good to deny to the public and so renewed efforts are being made to bring stretches of the bank under cultivation and to provide a walk over the "Brow". At that time in agricultural history when light land was dressed with marl, considerable excavation was carried out at the foot of the hill on the south side of the house. When this working ceased a huge marl pit was left containing several small ponds. The land to the north of the house is less undulating and at one time formed part of the nursery. In 1900 the only trees on the site were a few birch and sycamore on the hill near to the house. One could then stand, I am told, at the cottages on the northern boundary and obtain an uninterrupted view of the main house.

One of the first tasks was to establish shelter belts on this open, windswept site. On the western boundary rows of *Populus nigra italica* (Lombardy poplar) were planted. Some distance in from the poplars a row of *Quercus ilex* (Holm oak) was established. On the northern boundary a mixture of *Pinus silvestris* (Scots pine) and *Quercus ilex* form the first barrier. MR. HOPE, who has gardened here for forty-six years, still claims that the Holm oak is one of the best shelter-belt plants for the area. It is possible that × *Cupressocyparis leylandii* will prove equally successful and will grow more rapidly. Along part of the eastern boundary a pine wood, which was planted some fifty years ago, now affords good protection. A mixed wood of beech and birch and pine covers some three acres of low land on the north-western perimeter. This wood does not at present form part of the Garden; it is part of the thirty-six acres of land let out for farming purposes. In passing it is worth pointing out that the farmland was included in MISS BULLEY's gift and if the financial resources become available we have ample space for expansion! At present we have our hands full with the twenty-two and a half acres within the Garden.

Though the main shelter belts were established when MR. HOPE arrived in 1913, the further development of the Garden could not proceed apace immediately. The 1914–18 War held up progress and in this period some of the land was taken over for food production. Some planting did, however, take place in 1913–14. Soil was at that time imported into the marl pit and the plan to develop a rock garden on this site was taking shape. Some of the conifers planted on the north side of the Rock Garden have now developed into stately mature specimens. The outstanding plant in this group is a representative of *Chamaecyparis nootkatensis pendula*. There are some good forms of *C. lawsoniana* and a good tree of *Cedrus deodara*. The latter was planted at an earlier date, along with some weeping willows. A pond has been included in the Rock Garden, planted up with water lilies and other aquatic plants. The fringe of the pond carries a good complement of moisture-loving plants and at one end stand two specimens of *Salix vitellina pendula* (weeping willow) often admired in the past, but now showing obvious signs of age.

The Rock Garden flourished between the wars and attracted much interest. ANDRÉ CORREVON visited Ness to see the Rock Garden on more than one occasion. MR. BULLEY had always shown a special interest in what are generally termed "Alpines" and encouraged his collectors to concentrate on plants in this group. It is not surprising therefore to discover that *Gentiana sino-ornata* first flowered in this country at Edinburgh and Ness in 1912. The Rock Garden was sadly neglected during the Second World War and in 1947 sodium chlorate was applied to quite large areas to kill saplings of sycamore, brambles and other perennial weeds. The work of restoration still continues. As one might expect on a site which was formerly a marl pit, we experience many casualties due to "winter wet". The blocking of some of the original

drains has doubtless accentuated the problem. (Plant thieves are also active in the summer and obviously find dwarf conifers irresistible; we believe the situation is improving due in part to the active co-operation of the police.) The question naturally presents itself—"Is it wise to continue cultivating this site as a rock garden"? I believe the discerning plantsman would recognize one clear justification for this policy in the way a number of choice plants thrive here as if in their natural habitat. The members of the genus *Roscoea* flower prolifically and self-sown seedlings of *R. cautleoides* abound in the vicinity of the parent plants (Fig. 69). *Cyclamen neapolitanum album* gives a wonderful display from mid-August until the frosts come. Several large corms carried sixty dainty flowers over a period of some five weeks last autumn. *Perovskia atriplicifolia* also thrives on one of the mounds and shows what a desirable plant it is when it finds congenial conditions. *Tropaeolum polyphyllum* provides a very bright, if only short-lived, splash of orange at the height of each summer. *Primula nutans* has done remarkably well here (Fig. 68). In the autumn a number of South African plants distinguish themselves, notably *Agapanthus* spp. and *Schizostylis coccinea*. The *Agapanthus* thrive without protection, whilst *Schizostylis coccinea* and the variety 'Mrs. Hegarty' form quite large clumps. The genera *Gentiana*, *Lewisia*, *Dodecatheon*, *Soldanella*, *Cyananthus*, *Morisia* and *Platycodon* are represented, though not abundantly. We hope that a steady improvement of the drainage system will help us in increasing stocks of some of the more select plants. In a Rock Garden covering over one and a half acres large clumps of *Phlox subulata* hybrids, *Aubretia deltoidea* hybrids, *Alyssum saxatile*, *Helianthemum* hybrids, *Androsace* spp., *Campanula* spp. and *Silene schafta* are invaluable. A bulb meadow is becoming established and should prove to be a labour-saving feature.

As one leaves the Rock Garden along the path leading around the west of the house, one is brought to the base of a clump of *Eucalyptus gunnii* (Fig. 66). Planted in 1925, the tallest specimen in this small group is now some 66 feet in height. The only specimen in the district of comparable size is at Badgers Rake, Ledsham. *E. dalrympleana* also makes a sizeable tree in the Wirral. The largest specimens at Ness are approaching 50 feet in height. Perhaps the most striking member of this genus at Ness is *E. perriniana*. In accordance with the often recommended practice, this specimen has in the past been pruned back in spring; whether this pruning is necessary for the survival of the plant is not certain. (It has been demonstrated that the juvenile foliage of *Eucalyptus* is more frost-resistant than the adult foliage and by regular pruning a succession of juvenile growth can be induced.) The appearance of the plant is certainly improved by pruning, in this way the interesting perfoliate and strongly glaucous leaves are kept at eye level. *E. urnigera glauca* is treated similarly with good effect. We are at present trying to establish one further species in *E. coccifera*.

As one proceeds beyond the *E. gunnii* a glance at the hill to the right

will bring before the eye present-day efforts to establish heathers, conifers, *Berberis*, *Leptospermum* and other plants tolerant of poor soil, on the thin layer of sandy debris overlaying the rock. There are definite signs that this work will prove worth while. I hesitate to say more about it, for this area must not be a simple addition to the area under cultivation; it must prove in the end to be a feature requiring a minimum of attention.

Walking beyond the hill and through a narrow strip of elm trees one comes to the main area of the Garden. Looking to the left one sees a collection of oak trees planted behind the shelter belt of Holm oak. A number of flowering cherries have been planted beside the oak trees, and in this section there is a good specimen of the handkerchief tree *Davidia involucrata*.

The path to the right leads to the herbaceous border. It was here, some fifty-odd years ago, that the first ornamental section of Ness Gardens was laid out. This rectangular area, bounded on two sides by high hedges and on the other two sides by a dense screen of shrubs, was devoted to growing herbaceous perennials. There were two main paths running north to south down each side. From these there ran a series of joining paths, which were sunken by virtue of the fact that the soil had been mounded up on each side. The tops of the mounds were planted with hedges of *Tamarix*. One path led between plants flowering in May and June, another between plants flowering in July and so on through the later summer months. Each border provided a brief spell of glory and the rest was maintenance, with no means of employing mechanical aids. This area was converted into a single unit in the winter of 1957–8 with one main herbaceous border, viewed across a broad sweep of grass. There is an azalea border running alongside one of the hedges which each year attracts much attention. A most pleasing view is obtained of this border from across the grass and one can see beyond to the rhododendrons on the fringe of and in the pine wood. The camera regrettably brings into focus the glasshouses and potting shed behind the hedge and fails to do justice to the view.

To the north of the herbaceous border there is a mixed collection of herbaceous and woody plants. The winter-flowering viburnums in this collection provide colour in the drab months of the year. A large plant of *Prunus subhirtella autumnalis* close by lends support in brightening the winter scene, until *Hamamelis mollis* and *Mahonia japonica* come into flower. The end-walls of the potting-shed and the garage are covered with *Wisteria* and just opposite stand two good specimens of *Ginkgo biloba*.

At the time when the herbaceous borders were in their early stages and the Rock Garden was being laid out much was happening in the plant propagation section. The material from early expeditions of FORREST and KINGDON WARD was germinating and being grown on. When the 1914–18 War ended this material was ready for planting in permanent positions and it was decided to plant out a collection of

Photos: O. Polunin

FIGS. 56 and 57—White and pink forms of *Cyclamen persicum* growing in the mountains of the Lebanon (see p. 216)

Photo: J. E. Downward

FIG. 58—*Hamamelis mollis* 'Brevipetala', A.M. February 9, 1960. Exhibited by the Crown Estate Commissioners, Windsor Great Park. This new variety of Witch Hazel has buttercup-yellow flowers and is very sweetly scented (see p. 240)

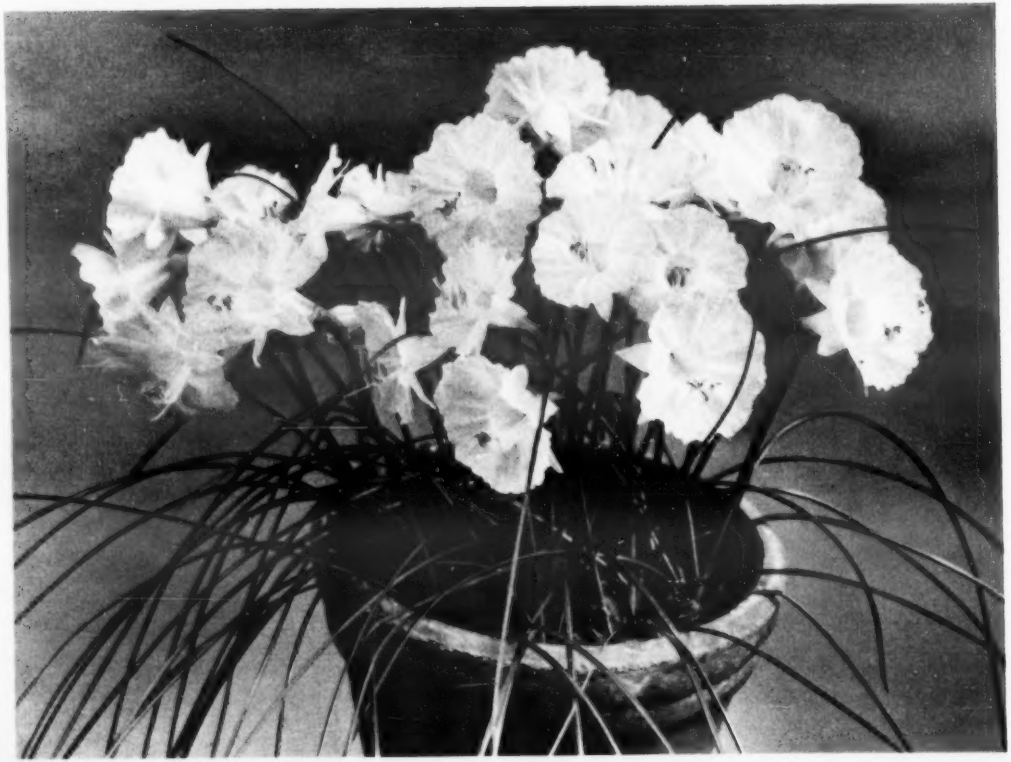

Photo: J. E. Downward

FIG. 59—*Narcissus cantabricus* var. *petunioides*, F.C.C. March 8, 1960. Exhibited by Messrs. D. & E. Blanchard. A beautiful variety of white-flowering hoop-petticoat daffodil (see p. 240)

FIG. 60—*C. pseudibericum*, one of the fine forms recently introduced by Dr. Peter Davis and Mr. O. Polunin (see pp. 213 and 216)

FIG. 61—A bed of *C. libanoticum* in the Hon. Lewis Palmer's greenhouse at Headbourne Worthy Grange, Winchester (see p. 216)

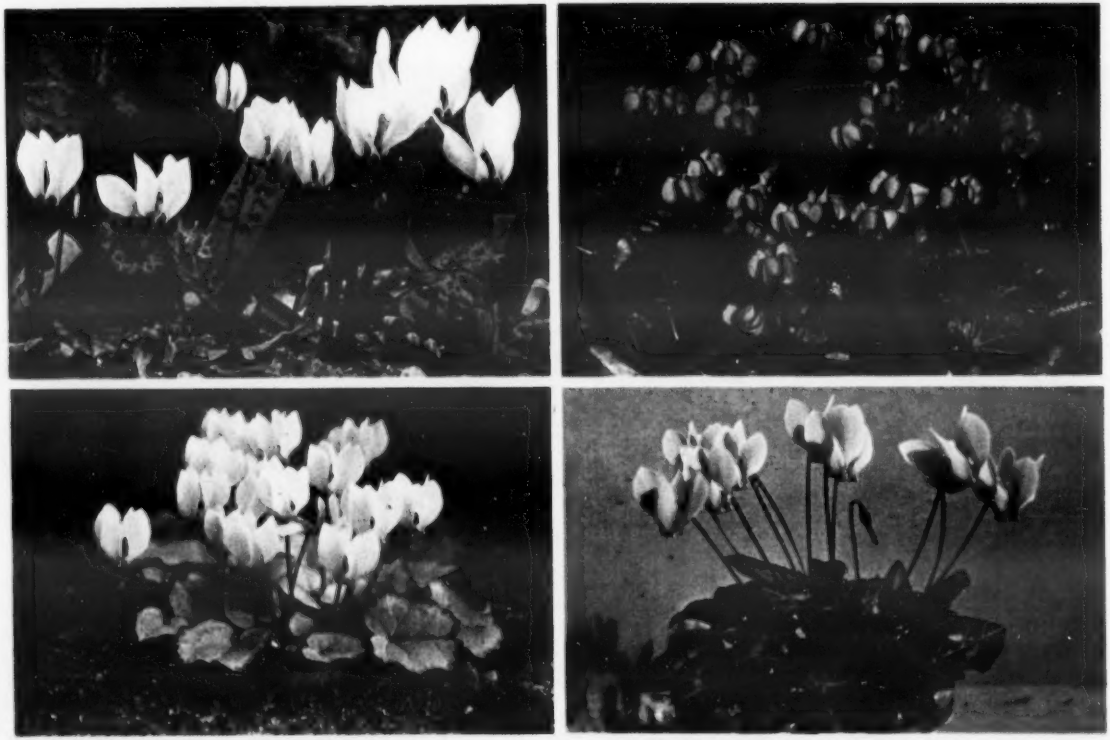

Photo: E. Hodgkin *Photo: E. Hodgkin*

FIG. 62—Top left: *C. cilicium* growing in the open in the Hon. Lewis Palmer's garden at Headbourne Worthy Grange, Winchester (see p. 212)

FIG. 63—Top right: *C. orbiculatum* var. *coum*, an unusually fine pan

FIG. 64—Bottom left: *C. graecum*, an unusual form with silvery foliage collected by Mr. E. Hodgkin in Greece

FIG. 65—Bottom right: *C. graecum*, a fine pink form also collected in Greece and shown by Mr. E. Hodgkin (see p. 215)

Photo: W. Cull

FIG. 66—A group of *Eucalyptus gunnii*. The specimen supported with props was brought down in a snowstorm in 1958 and in spite of being winched up from a horizontal position, continues to thrive (see p. 221)

Photo: W. Cull

FIG. 67—A view of part of the pond and water-loving plants

Photo: J. K. Hulme

FIG. 68—*Primula nutans*, an attractive member of the Soldanelloides section of the genus (see p. 221)

Photo: J. K. Hulme

FIG. 69—*Roscoea cautleoides*, introduced into cultivation by George Forrest when collecting for Mr. Bulley; the genus is named in honour of Wm. Roscoe, a famous Liverpool businessman, and thrives in the University of Liverpool Botanic Garden, and has pale yellow orchid-like flowers. Some of the plants shown are from self-sown seedlings (see p. 221)

Photo: J. K. Hulme

FIG. 70—*Magnolia salicifolia* on the specimen lawn at Ness (see p. 225)

Photo: J. K. Hulme

FIG. 71—Mr. J. Hope standing beside a fine Rhododendron Loderi which he planted

Chinese shrubs. Shortly afterwards this idea was modified and the shrubbery was planted with hybrids and species which could qualify for inclusion on beauty and interest only. Rhododendrons predominated in this area and massed as they were provided a riot of colour in the spring. The passage of time saw the rhododendrons become overgrown, and spreading in such a way that the paths could only be negotiated with the aid of the "breast stoke". The 1939–45 War and post-war conditions had reduced MR. HOPE's staff to the smallest numbers and it was left to MR. J. G. DUNCAN, the first Director of the new University Botanic Garden, to replant the area in 1956.

A mature fruit orchard stood between the then shrubbery and the pine wood and the vegetable garden adjoined the one and a half acres of orchard. The orchard and vegetables were grubbed and cleaned away. The rhododendrons were transplanted on the edge of and in the pine wood and grass sown in front of the rhododendrons. There is now an uninterrupted stretch of grass 250 yards long and on the average 25 yards broad, with the curves of the rhododendron beds sweeping gracefully forward and back again. *Rhododendron mucronulatum* begins to flower in early January, followed about a fortnight later by *R. mucronulatum acuminatum*. The latter has chanced to miss the frosts when in flower in the last two years and appears to flower more prolifically than the former. We see in early spring the commencement of the main flowering season of the rhododendrons. One of the most distinguished of this early flowering group is *R. mallotum*. Our specimen is some 9 feet in height and 7 feet in diameter. There are not many visitors in March and April to see this plant carrying its compact trusses of waxy, deep crimson flowers, although many are present later in the year to admire the young growth with rich brown indumentum on the lower surfaces of the leaves. *R. russatum* proves to be a useful plant at the front of the borders and attracts a lot of attention when the compact bushes are covered with the small trusses of blue flowers. In the pine wood large specimens of *R. fictolacteum* are much in evidence. The large bell-shaped flowers are carried in loose trusses; they are white in colour and marked on the inside of the corolla with purple blotches. The most noteworthy rhododendron in the pine wood is a plant related to *R. falconeri*. It is now some 18 feet in height and carries trusses of flowers fairly similar to those seen on *R. fictolacteum*. The young foliage is most striking, being covered on both surfaces with showy brown indumentum. There are various forms of *R. neriiflorum* on the fringe of the pine wood; in these plants we see again the waxy quality of the scarlet flowers which indicate their relationship to *R. mallotum*. For sheer brightness of flower we must turn to *R. barbatum*, in which the scarlet flowers appear to be luminous.

As the season moves on *R. oreotrephes* covers itself with pale open saucer-shaped flowers and *R. arboreum* comes into flower. The specimens at Ness will obviously never compete in size with the *R. arboreum*, for instance, at Benmore; they are none the less desirable plants to

have. Related to *R. arboreum* we have the pink-flowered *R. argyrophyllum*. The silvery undersurfaces of the leaves greatly enhance the appearance of this plant. Our specimen is compact, of pleasantly rounded shape and stands some 10 feet in height. We have a number of forms of *R. cinnabarinum* but all are representatives of the yellow end of the colour range of this species. We would like to obtain forms of *R. cinnabarinum* with a stronger tinge of pink in the flower. Of the good yellow-flowered rhododendrons we have *R. wardii* and the similar *R. souliei*. *R. campylocarpum* is also represented in our collection. Of the Thompsonii Series we require a good form of the type plant. So far as the species are concerned *R. decorum* rounds off the main flowering season. We have then to rely on the hardy hybrids for flower until *R. ferrugineum* comes into flower. *R. auriculatum* completes the flowering season with the exception of a few off-season flushes of flower from R. 'Yellow Hammer'. Without compiling a catalogue of the rhododendrons in our collection it may be taken that our selection of main season flowering species is fairly comprehensive. We are now raising plants of such species as *R. keysii*, *R. griersonianum* and some of the hybrids of *R. griersonianum* to prolong the flowering season.

There is now no barrier in front of the pine wood and one can stroll into the semi-shade of the pines to see rhododendrons, *Embothrium coccineum* and *Desfontainea spinosa*, which were planted some thirty years ago. Included in this original planting was a specimen of *Lomatia ferruginea*, now some 15 feet in height. The distinctive fern-like leaves are highly attractive and the small pendulous trusses of yellow and orange flowers add a quaint beauty to the plant. The specimen at Ness cannot vie with the most remarkable one at Castlewellan, Northern Ireland, but it is worth recording that MR. CHARLES PUDDLE has described it as "the best specimen of *Lomatia ferruginea* I have seen outside Cornwall".

Further planting work has been carried out in the pine wood over the last two years. Young plants of *Lomatia tinctoria*, *Crinodendron hookeri*, *Richea scoparia*, *Eucryphia glutinosa* and several species and varieties of *Camellia* are now making steady progress. We are trying out in this situation *Olearia semidentata*, *Mitraria coccinea* and other semi-tender species. In this vicinity the petiolarid primulas, *Primula boothii* and *P. gracilipes* provided a very fine display of flower throughout the later months of winter and the spring of this year.

In the rhododendron border on the edge of the pine wood we have planted clumps of *Meconopsis*, *Primula* and *Lilium*. Several clumps of *L. davidii* and *L. regale* flowered for the first time this year from seed sown in 1957. A number of primulas have made themselves at home in this border including *P. nutans*, whilst *P. viali* has flowered prolifically two years in succession. Although one had heard reports of plants of this species behaving as perennials my own previous experience of this species had led me to believe that it is monocarpic in cultivation. We have found a happy exception and not a single plant but a whole

group. Walking along the rhododendron border to the south one comes across a collection of *Sorbus* planted on a lawn, which was, before the last war, a bowling green. This was one of the many recreational facilities provided by MR. BULLEY for the inhabitants of this district. A second bowling green, beside what is now the public entrance to the Garden, has been converted into a free car park.

What used to be a shrubbery is now a specimen lawn, with the more important or immovable occupants of the old shrubbery dotted about on it. Here are specimens of magnolia (Fig. 70) and sorbus, of cornus and fothergilla. There is a notable specimen of *Eucryphia* × 'Nymansay' on this lawn, but above all we take pride in the original plant of *Pieris forrestii*. Once it was surrounded with rhododendrons and the side branches became denuded; today, however, fresh strong growths are arising from the base. The intense scarlet young growths are brilliant beyond description and are noticed by visitors from the remotest distance. The specimen may now be described as a composite one; several main branches have rooted into the ground and the whole clump is some 14 feet in height and 20 feet in diameter. In addition to raising new plants introduced by collectors, several new forms of plants have been selected at Ness. A white form of *Clematis jackmanii* raised here, is sold in the trade under the varietal name 'J. Hope'. Perhaps MR. HOPE's outstanding selection was of a dwarf form of *Leptospermum scoparium nichollsii nanum*. This diminutive form, with its red-tinged foliage, is more compact than any other *Leptospermum* I have seen and carries most distinctive crimson flowers. It is not, unfortunately, completely hardy but makes a very worth while addition to any Alpine House collection.

The Gardens have over the years been open to the public and one of the trust deeds is that the University must keep a specified acreage open to the public free of charge at all times. The whole of the area described above is, in fact, open to the public. The maintenance of ornamental grounds is by no means the summation of the work at Ness. The most important functions of the Garden are to provide facilities for the University staff and students to carry out research on living plants and also to provide class material for the teaching of botany in the University.

An Experimental Field over an acre in size is at present planted with *Digitalis*, *Cytisus*, *Calystegia*, *Stachys*, *Dryopteris*, and other ferns. All these plants are the subjects of taxonomic experiments. Soil mycology experiments are also being conducted on a part of the field.

There are, in addition, three 90 feet × 30 feet aluminium glasshouses containing experimental plants and a collection of plants of more general botanical interest. One of the plant houses is divided into compartments to provide separate conditions for the different groups of experimental plants. Supplementary lighting has been fitted into one of the compartments for controlling day-length. This equipment has been used mainly for raising fern-spores under short-day conditions.

Another house is devoted to raising plants for out of doors and is fitted with a Mist Propagation Unit.

The collection of plants has greatly increased over the last three years, largely by acquisitions through the International Botanical Exchange Scheme. It has been possible to publish in these years a growing seed list, which last year contained 900 different species.

The Garden staff are fully occupied in the summer on maintenance work and much of the work in winter months will have to be devoted to the development of features to which reference has already been made. It is planned, nonetheless, to create new features. A collection of the older hybrid roses is being gathered together in preparation for planting a rose garden demonstrating the history of the development of the garden rose. A number of poorly developed trees are scheduled for removal to create new vistas, the views obtained will in turn be improved by fresh planting.

The pattern of the garden is changing as the semi-cultivated areas, which previously separated one feature from another, are being developed to create a single integrated garden.

Acknowledgments are due to MISS A. L. BULLEY and MR. J. HOPE for information on the history of Ness and DR. J. P. SAVIDGE for meteorological information on south-west Wirral.

A MEMORABLE YEAR FOR SHRUBS AT WYE COLLEGE

Elizabeth Emmerson

READERS of this JOURNAL may remember that Wye College has a wide range of the less hardy flowering shrubs growing in the open. Descriptions of some of these shrubs, and comments on their degree of hardiness and susceptibility to frost were given by LLOYD (1953) and CROSBY (1956). Now at the end of 1959 we can record their behaviour in one of the most favourable years of this century, when a hot dry summer followed a mild winter and gave the more exotic species growing conditions approaching those of their natural habitat.

For the spring-flowering shrubs that form their flower buds the previous autumn, the mild winter proved advantageous for the flower buds remained undamaged, and there was a wonderful display of *Forsythia* × *intermedia* 'Spectabilis' and other species. The large unprotected flower buds of the Chinese *Paulownia tomentosa* also escaped damage. It is one of the few trees bearing blue flowers and is a rapid grower, our 10-year-old tree having reached a height of approximately 30 feet.

Rosa banksiae was a mass of pale yellow double flowers this spring,

and the New Zealand daisy bushes, *Olearia* spp., whose natural habitat is hot and sunny, were noticeably prolific, particularly the hybrid *O.* × *scillonensis* with white flowers. *Azara serrata*, an evergreen from Chile, with clusters of yellow flowers composed mainly of stamens, bloomed better than before and has made much new growth.

An abundance of new growth was characteristic of many plants, which was somewhat surprising in view of the lack of moisture in the soil. Several *Campsis*, both species and hybrids, which have been cut by frost each year since their planting in 1950 were not killed back last winter. They have flowered for the first time this summer and made exceptionally strong shoots of up to 6 feet in length. The orange, trumpet-shaped flowers and the pinnate leaves are attractive, so it is unfortunate that it needs a good summer to flower well.

Exceptional growth was shown by *Albizzia julibrissin rosea* and *Lagerstroemia indica*, but as yet they have produced no flowers. A young plant of *Eucalyptus perrineana* has produced 6 feet of new growth, and *Abutilon megapotamicum* has flowered continuously and made a mass of new shoots. *Garrya elliptica* has produced new shoots of 2–3 feet in length and *Phlomis fruticosa* and *Senecio laxifolius* have had to be severely pruned or they would have smothered adjacent plants. An eleven-year-old *Magnolia* × *soulangiana* has likewise grown tremendously and formed many flower buds.

Many shrubs that flower towards the end of the season on the current year's growth have also benefited by the growing conditions of this summer. A plant of *Vitex agnus-castus* that normally forms flower trusses which seldom open to their full extent, flowered profusely during late August and September, and formed an attractive bush with lavender spikes reminiscent of a buddleia. The autumn-flowering *Perovskia atriplicifolia* also flowered abundantly, the blue flowers showing to good advantage against the grey leaves. It is a semi-woody plant and should be cut back to the main framework of branches each spring for the best results.

Although it is generally grown as a cool-house plant, *Erythrina crista-galli* from Brazil can be grown successfully in the open at Wye. Even when planted against a south wall it is killed to the ground each winter, but if the large rootstock is protected it will survive the winter and will produce a number of thick shoots terminating in clusters of deep crimson pea-shaped flowers. This year it has been really magnificent. Many doubtfully hardy shrubs which have borne some flowers in previous years, have flowered well this season. *Caesalpinia japonica*, growing against a south wall, has made new shoots of 5–6 feet in length, and the large trusses of yellow flowers with red anthers were a magnificent sight in June. The pinnate, fern-like leaves are also attractive.

In his article of 1953, LLOYD mentioned that *Buddleia colvilei* planted in 1950 had not flowered. In 1958 it produced one truss of crimson flowers, and this year it had a large number of flowers and made many new shoots. Although it is usually grown in this country

for its long sword-shaped leaves, the New Zealand flax, *Phormium tenax*, surprised us by flowering this year. The dark red flowers with yellow stamens were borne on a spike 6 feet in length. In its native land, where the leaves are used for their fibre, it must be a very handsome plant.

A plant rarely seen in English gardens is the autumn-flowering Chilean shrub *Colletia armata*. It thrives in full sun and flowers regularly. This year it has flowered more profusely than usual, the masses of small creamy white flowers being heavily perfumed.

This year some plants have had two flowering seasons, or the flowering period has been greatly extended, probably as a result of rapid growth. *Abelia* × *grandiflora* having started in July was still flowering in September. A recently acquired *A. floribunda*, planted against a south wall, has also flowered well. Vivid rose-pink tubular flowers, 2 inches long, occurred throughout the length of the shoots. *Potentilla* spp. have also responded to bright sunshine, the large-flowered *P. arbuscula* of dwarf habit being exceptionally good.

It has been a good year for berried shrubs. *Berberis* spp. and *Malus* spp. have fruited well, particularly *M. toringoides*, a small graceful tree with pinkish-red fruits. Both the common myrtle, *Myrtus communis*, and the dwarf *M. communis tarentina*, showed black berries while still bearing white flowers, and *Pyracantha* and *Cotoneaster* spp. have an exceptional number of berries this year. For several years a Chinese vine, *Ampelopsis heterophylla*, growing on a south-facing wall, has borne no fruits, but at the end of September it was covered with clusters of green berries which gradually turned china blue, speckled with black dots, giving the impression of groups of tiny birds' eggs. If this attractive plant set fruit each year it would be a great asset in the garden and for indoor decoration.

It has also been an exceptional year for seed formation and ripening. *Cytisus battandieri*, a native of North-West Africa which has trusses of yellow sweetly-scented flowers, is now covered with ripe seed pods, whereas normally there are few.

The picture of the gardens at Wye in 1959 would be incomplete if no mention were made of the plants which have suffered as a result of the persistently hot, dry weather. *Ceanothus* spp. were severely affected, a large *C. dentatus* being killed and other species and hybrids dying back at the tips. This was unexpected as most of them are natives of California where they may experience similar weather. The cause appeared to be that at Wye *Ceanothus* spp. are shallow-rooting, owing to the underlying chalk. If the roots penetrate to the chalk the leaves show the typical interveinal yellowing of lime-induced chlorosis. *Buddleia davidi*, *B. globosa*, *Forsythia* spp. and ornamental cherries have also been adversely affected, and some large yew trees show severe wilting and browning of the tips.

It may well be that we shall not know the full effects of the 1959 weather on many of our plants until the spring growth takes place, so we shall await 1960 with keen interest.

WISLEY TRIALS, 1959

EARLY-FLOWERING CHRYSANTHEMUMS

One hundred and seventy-six stocks of chrysanthemums were grown at Wisley in 1959. Forty-two of these were grown for the first time, having been selected during 1958 for trial at Wisley by the Joint Chrysanthemum Committee of The Royal Horticultural Society and The National Chrysanthemum Society.

Cuttings were rooted during early March, the rooted cuttings being potted up into 3-inch pots and grown on in a cool greenhouse.

The trial was inspected by the Joint Chrysanthemum Committee on August 18, 31, and September 11, 28, 1959, and on its recommendation The Royal Horticultural Society and The National Chrysanthemum Society have made jointly the following awards to chrysanthemums after trial at Wisley.

The varieties are arranged in this report according to the classification of The National Chrysanthemum Society.

The number in brackets after the description of the variety was that under which it was grown in the trials.

AS DISBUDDED VARIETIES FOR GARDEN DECORATION

The trial of disbudded varieties numbered ninety-nine varieties and twelve plants of each stock were planted on May 5, 1959.

SECTION 21. OUTDOOR VARIETIES, REFLEXED

(*a*) Large-flowered

White

CAPITAL. (Raised, introduced and sent by Messrs. J. & T. Johnson, The Nurseries, Tibshelf, Derbyshire.) **F.C.C.** September 28, 1959. Described R.H.S. JOURNAL, **83**, pp. 218 and 219 (**A.M.** 1957). [2]

DOROTHEA. (Raised, introduced and sent by Messrs. J. & T. Johnson.) **A.M.** August 31, 1959. Plant 3¾ feet high, compact and erect, bearing flower stems 30 inches long. Flowers 6 inches diameter, outer florets white, inner florets cream. [6]

Bronze

ALERT. (Raised by Mr. H. Shoesmith V.M.H., introduced and sent by Messrs. H. Shoesmith Ltd., Mayford Nurseries, Moor Lane, Westfield, Woking, Surrey.) **A.M.** August 18, 1959. Plant 3¾ to 4 feet high, compact and erect, bearing flower stems 30 to 36 inches long. Flowers 5½ inches diameter, Cadmium Orange (H.C.C. 8/1) lightly overlaid reddish bronze. [99]

BRONZE PRIDE. (Sent by Messrs. Brownsland Nurseries, 119 Browns Lane, Allersley, Coventry.) **A.M.** September 11, 1959. Plant 4½ feet high, compact and erect, bearing flower stems 36 to 40 inches long. Flowers 6 inches diameter, Straw Yellow (H.C.C. 604) overlaid reddish bronze. [95]

Light Bronze

MAXLEN TANGERINE. (Raised by Messrs. H. Shoesmith Ltd., introduced and sent by Mr. Leonard Wakeford, Palmerston Nurseries, Romsey, Hants.) **A.M.** August 31, 1959. Plant 4 to 4½ feet high, compact

and erect, bearing flower stems 36 inches long. Flowers 5½ to 6 inches diameter, a bright orange bronze with slight crimson flush, reverse yellowish bronze red. [53]

Pale Pink

BETTINA. (Raised, introduced and sent by Mr. Frank Rowe, Rylands Nurseries, Wellington, Somerset.) **A.M.** September 28, 1959. Plant 3¾ to 4 feet high, compact and erect, bearing flower stems 36 inches long. Flowers 6½ inches diameter, Rose Pink (H.C.C. 427/2). [86]

Salmon

SALMON SHEILA ROSE. (Raised, introduced and sent by Mr. A. C. Shipley, Orchard Nurseries, Mosslea Road, Bromley, Kent.) **A.M.** August 18, 1959. Plant 4 feet high, compact and erect, bearing flower stems 28 inches long. Flowers 5½ inches diameter, a colour near Jasper Red (H.C.C. 018/2), reverse golden yellow. [77]

(*b*) Medium-flowered

Yellow

STARBRITE. (Raised, introduced and sent by Messrs. J. & T. Johnson.) **F.C.C.** September 28, 1959. Described R.H.S. JOURNAL, **84**, p. 285 (**A.M.** 1958). [35]

SUNAVON. (Raised, introduced and sent by Messrs. J. & T. Johnson.) **F.C.C.** September 11, 1959. Described R.H.S. JOURNAL, **83**, p. 219 (**A.M.** 1957). [36]

Light Bronze

GOLDEN LEADER. (Raised, introduced and sent by Messrs. Colham Green Nurseries Ltd., Chapel Lane, Hillingdon, Middx.) **A.M.** September 11, 1959. Plant 4 to 4½ feet high, compact and erect, bearing flower stems 30 to 34 inches long. Flowers 5½ to 6 inches diameter, Buttercup Yellow (H.C.C. 5/1) very lightly overlaid bronze. [63]

Pink

CATHERINE PORTER. (Raised, introduced and sent by Messrs. J. & T. Johnson.) **A.M.** September 11, 1959. Plant 3 feet high, compact and erect, bearing flower stems 26 to 30 inches long. Flowers 5 inches diameter, Roseine Purple (H.C.C. between 629/2 and 629/3). [93]

GAIETY. (Raised, introduced and sent by Messrs. H. Woolman Ltd., Shirley, Birmingham.) **A.M.** August 31, 1959. Plant 3¾ feet high, compact and erect, bearing flower stems 36 inches long. Flowers 5 to 5½ inches diameter, Phlox Pink (H.C.C. 625/3), inner florets slightly flushed salmon. [15]

LORNA DOONE. (Raised by Mr. H. Shoesmith, V.M.H., introduced and sent by Mr. Frank Rowe.) **A.M.** August 31, 1959. Plant 3¾ feet high, compact and erect, bearing flower stems 34 to 38 inches long. Flowers 5 to 5½ inches diameter, Fuchsine Pink (H.C.C. 627/2), paler colour towards outer florets. [85]

PAULINE SHEPHERD. (Raised by Mr. H. Smoesmith, V.M.H., introduced and sent by Mr. Frank Rowe.) **A.M.** September 11, 1959. Plant 4 to 4½ feet high, erect and compact, bearing flower stems 36 to 38 inches long. Flowers 5¼ to 5½ inches diameter, a colour near Magenta (H.C.C. 27/2). [87]

Red

RED LEADER. (Raised by Messrs. Colham Green Nurseries Ltd., and sent by Mr. G. R. Bacon, Heathfield Nurseries, Eccleshill, Bradford, Yorks.) **A.M.** September 11, 1959. Plant 4 to 4½ feet high, compact and erect, bearing flower stems 30 to 36 inches long. Flowers 6 to 6½ inches diameter, rich reddish crimson, reverse golden buff. [64]

STARFIRE. (Raised and sent by Messrs. H. Shoesmith Ltd.) **A.M.** August 31, 1959. Plant 2¾ to 3 feet high, compact and erect, bearing flower stems 20 to 24 inches long. Flowers 4½ to 5 inches diameter, a deep rich red near Currant Red (H.C.C. 821), changing to reddish bronze with age. [61]

SECTION 22. OUTDOOR VARIETIES, INCURVING

(*a*) Large-flowered

Bronze

DOONE VALLEY. (Raised by Mr. H. Shoesmith, V.M.H., introduced and sent by Mr. Frank Rowe.) **A.M.** August 31, 1959. Plant 4½ feet high, compact and erect, bearing flower stems 36 to 40 inches long. Flowers 5 inches diameter, light reddish bronze, reverse gold. [84]

AS SPRAY VARIETIES FOR GARDEN DECORATION

The trial of spray varieties numbered seventy-seven varieties and three plants of each stock were planted on May 13, 1959.

SECTION 21. OUTDOOR VARIETIES, REFLEXED

(*c*) Small-flowered

Pink

LILAC DAY. (Sent by Messrs. Elm House Nurseries, Walpole St. Peter, Wisbech, Cambs.) **F.C.C.** August 31, 1959. Described R.H.S. JOURNAL, **84**, p. 285 (**A.M.** 1958). [77]

Bronze

ROSESPRAY. (Raised, introduced and sent by Messrs. Elm House Nurseries.) **A.M.** September 11, 1959. Plant 4 feet high, compact and erect, bearing flower stems 18 to 22 inches long. Flowers 2¼ to 2½ inches diameter, a colour near Magenta (H.C.C. 27/2), inner florets slightly tinged light bronze. [69]

Salmon

WALLY RUFF. (Sent by Messrs. Elm House Nurseries). **A.M.** August 18, 1959. Plant 2 feet high, compact and erect, bearing flower stems 20 to 24 inches long. Flowers 2¼ to 2½ inches diameter, a colour near Spiraea Red (H.C.C. 025/2), centre florets tinged light bronze. [73]

Yellow

GOLDEN ORFE. (Sent by Messrs. Elm House Nurseries.) **A.M.** September 28, 1959. Plant 2¼ feet high, compact and erect, bearing flower stems 20 inches long. Flowers 2½ to 2¾ inches diameter, Aureolin (H.C.C. 3). [66]

SECTION 24. OUTDOOR VARIETIES, POMPON

(*a*) Tall

Pink

CUTIE. (Raised, introduced and sent by Messrs. J. & T. Johnson.) **A.M.** August 18, 1959. Plant 2 to 2¼ feet high, compact and erect, bearing

flower stems 12 to 15 inches long. Flowers 1 3/10 inches diameter, Magenta (H.C.C. between 27/2 and 27/3), inner florets yellow tipped reddish purple. [54]

DANNY. (Sent by Messrs. Elm House Nurseries.) **A.M.** August 18, 1959. Plant 2 to 2½ feet high, compact and erect, bearing flower stems 24 to 28 inches long. Flowers 1½ inches diameter, outer florets Cyclamen Purple (H.C.C. 30/2), inner florets tinged yellowish orange. [55]

PETITE. (Sent by Messrs. Elm House Nurseries.) **A.M.** September 28, 1959. Plant 2 to 2½ feet high, compact and erect, bearing flower stems 18 to 22 inches long. Flowers 1 3/10 inches diameter, Rhodamine Purple (H.C.C. between 29/2 and 29/3). [51]

White

MITZIE. (Raised, introduced and sent by Messrs. J. & T. Johnson.) **A.M.** August 31, 1959. Plant 2½ to 3½ feet high, compact and erect, bearing flower stems 24 to 30 inches long. Flowers 1⅞ inches diameter, creamy white, yellow in centre. [35]

Yellow

ANDY PANDY. (Raised, introduced and sent by Messrs. J. & T. Johnson.) **A.M.** August 18, 1959. Plant 2 to 2½ feet high, compact and erect, bearing flower stems 15 to 18 inches long. Flowers 1½ inches diameter, Aureolin (H.C.C. 3). [37]

(*b*) Dwarf

Light Bronze

PICOLINO. (Raised, introduced and sent by Messrs. J. & T. Johnson.) **A.M.** August 31, 1959. Plant 17 inches high, compact and erect, bearing flower stems 10 to 12 inches long. Flowers 1⅞ inches diameter, Buttercup Yellow (H.C.C. 5), centre florets reddish bronze. [20]

Pink

ROSA. (Raised, introduced and sent by Messrs. J. & T. Johnson.) **A.M.** August 31, 1959. Plant 20 to 22 inches high, compact and erect, bearing flower stems 12 to 15 inches long. Flowers 1½ inches diameter, Rhodamine Purple (H.C.C. between 29/1 and 29/3). [27]

DAHLIAS

Two hundred and thirty-one stocks of dahlias were grown at Wisley in 1959. Seventy-nine of these stocks were grown for the first time, sixty having been selected during 1958 for trial at Wisley by the Joint Dahlia Committee of The Royal Horticultural Society and The National Dahlia Society, and nineteen were accepted for inclusion in the trial of dwarf bedding dahlias.

The trial was inspected by the Joint Dahlia Committee on August 7, 21, and September 11, 1959, and on its recommendation The Royal Horticultural Society and The National Dahlia Society have made jointly, after trial at Wisley, the following awards to dahlias as varieties for garden decoration.

The varieties are arranged in this report according to the classification of The National Dahlia Society.

The number in brackets after the description of the variety was that under which it was grown in the trial.

Class VIA. Large-flowered Decorative

LAVENGRO. (Raised, introduced and sent by A. T. Barnes Esq., Kingsbrook Gardens, Cardington Road, Bedford.) **A.M.** September 11, 1959. Described R.H.S. JOURNAL, **82**, p. 29 (**H.C.** 1956). [16]

SALLY TOMBLESON. (Raised by Mr. Heath Johnston, New Zealand, introduced and sent by John Riding, Esq., 36 Alderman's Hill, Hockley, Essex.) **A.M.** September 11, 1959. Plant 6 to 6½ feet high, compact and erect, bearing flower stems 18 to 22 inches long. Flowers 10½ to 11 inches diameter, Chrome Yellow (H.C.C. 605) overlaid Poppy Red (H.C.C. 16/1). [4]

SWANAVON. (Raised, introduced and sent by T. R. H. Lebar, Esq., 23 Winifred Road, Erith, Kent.) **H.C.** August 21, 1959. Plant 5 to 5½ feet high, compact and erect, bearing flower stems 18 inches long. Flowers 8½ inches diameter, outer florets white, inner florets white, cream at base. [2]

Class VIB. Medium-flowered Decorative

COLUNA. (Raised, introduced and sent by Messrs. Brown & Such Ltd., Royal Berkshire Nurseries, Maidenhead, Berkshire.) **A.M.** September 11, 1959. Plant 5 feet high, compact and erect, bearing flower stems 12 to 15 inches long. Flowers 5 to 5½ inches diameter, white overlaid Uranium Green (H.C.C. 63/2). The flowers of this variety usually exceed 6 inches in diameter particularly when the plant is grown for exhibition purposes (**H.C.** 1952). [19]

Class VIC. Small-flowered Decorative

BRUMAS. (Raised, introduced and sent by Messrs. D. Bruidegom, 63 Nieuw Baarnstraat, Baarn, Holland.) **H.C.** September 11, 1959. Plant 4½ feet high, compact and erect, bearing flower stems 18 to 20 inches long. Flowers 4¾ to 5¾ inches diameter, white. [18]

BRUNSHAW. (Raised and sent by Mr. J. F. Barwise, V.M.H., Towneley Burnsery, Burnley, Lancs.) **H.C.** August 7, 1959. Plant 3½ to 4 feet high, compact and erect, bearing flower stems 16 inches long. Flowers 4¼ to 4½ inches diameter, Buttercup Yellow (H.C.C. between 5/2 and 5/3) overlaid Jasper Red (H.C.C. 018/2). [43]

Class VID. Miniature-flowered Decorative

BABY DAUGHTER. (Raised, introduced and sent by Messrs. J. G. Ballego & Sons, Bloemhove Nurseries, Rijnsburgerweg 131–133, Leiden, Holland.) **H.C.** September 11, 1959. Plant 4 to 4½ feet high, compact and erect, bearing flower stems 10 to 15 inches long. Flowers 3½ inches diameter, Roseine Purple (H.C.C. 629/2), yellow at base. [67]

CYNTHIA TAYLOR. (Raised, introduced and sent by W. Taylor, Esq., 60 New Lane, Aughton, near Ormskirk, Lancs.) **H.C.** August 21, 1959. Plant 4 to 4½ feet high, compact and erect, bearing flower stems 12 to 15 inches long. Flowers 3 inches diameter, pinkish white, lightly touched Mauve (H.C.C. 633), at tips of florets. [70]

Class VIIIA. Large-flowered Pompon

ELIZABETH CONGDEN. (Raised, introduced and sent by E. A. Wheeler, Esq., 23 Lansdown Road, Swindon, Wilts.) **H.C.** September 11, 1959. Plant 5 feet high, compact and erect, bearing flower stems 15 to 20 inches long. Flowers 2½ inches diameter, a clear bright colour near Primrose Yellow (H.C.C. 601). The flowers of this variety usually exceed 3 inches in diameter particularly when the plant is grown for exhibition purposes. [178]

Class VIIIB. Medium-flowered Pompon

ANTONY PARKER. (Raised, introduced and sent by Mr. Vincent F. Parker, The Nurseries, Manor Road South, Hinchley Wood, Esher, Surrey.) **A.M.** September 11, 1959. Described R.H.S. JOURNAL, **83**, p. 125 (**H.C.** 1957). [179]

Class VIIIC. Small-flowered Pompon

POM OF POMS. (Raised, introduced and sent by Messrs. D. Bruidegom.) **H.C.** August 21, 1959. Plant 4¾ feet high, compact and erect, bearing flower stems 15 to 18 inches long. Flowers 1⅜ inches diameter, Signal Red (H.C.C. 719). [184]

Class IXA. Large-flowered Cactus

RENE CROWLE. (Raised, introduced and sent by Messrs. J. F. Spencer & Son Ltd., Hockley, Essex.) **A.M.** September 11, 1959. Described R.H.S. JOURNAL, **83**, p. 125 (**H.C.** 1957). [79]

SURPRISE. (Raised by Baker, U.S.A., introduced by Messrs. Rocky River Dahlia Gardens, Ohio, U.S.A., and sent by G. F. Drayson, Esq., 23 Palmerston Road, Buckhurst Hill, Essex.) **A.M.** August 21, 1959. Plant 5 to 5½ feet high, compact and erect, bearing flower stems 18 inches long. Flowers 9 to 9½ inches diameter, Straw Yellow (H.C.C. 604/1) lightly suffused pale bronze. [6]

ARAB QUEEN. (Raised in Australia, introduced by Mr. Stuart Ogg, The Grove Nurseries, Swanley, Kent, and sent by G. F. Drayson, Esq.) **H.C.** August 21, 1959. Plant 4 feet high, compact and erect, bearing flower stems 15 inches long. Flowers 10½ inches diameter, outer florets Primrose Yellow (H.C.C. 601/1) flushed Carrot Red (H.C.C. 612/2), inner florets Primrose Yellow (H.C.C. 601). [74]

HIGH STANDARD. (Raised, introduced and sent by Messrs. D. Bruidegom.) **H.C.** September 11, 1959. Plant 4 feet high, compact and erect, bearing flower stems 18 to 20 inches long. Flowers 6½ to 7 inches diameter, Primrose Yellow (H.C.C. 601/2) suffused Chinese Coral (H.C.C. 614/1). The flowers of this variety usually exceed 8 inches in diameter particularly when the plant is grown for exhibition purposes. [92]

MISS UNIVERSE. (Raised, introduced and sent by Messrs. D. Bruidegom.) **H.C.** August 21, 1959. Plant 5½ feet high, compact and erect, bearing flower stems 20 to 24 inches long. Flowers 8½ inches diameter, Carrot Red (H.C.C. 612) suffused Mandarin Red (H.C.C. 17/1). [88]

Class IXB. Medium-flowered Cactus

BENELUX. (Raised, introduced and sent by Messrs. Wm. de Ruyter, P.O. Box 9, Dorpsstraat 54, Oegstgeest, Holland.) **H.C.** September 11, 1959. Plant 4 feet high, compact and erect, bearing flower stems 12 to 15 inches long. Flowers 6¾ to 7 inches diameter, a very clear pale yellow near Uranium Green (H.C.C. 63/3). [106]

CONGRES DE NANTES. (Raised by Payen-Lemonnier, France, introduced and sent by Mr. Stuart Ogg.) **H.C.** August 21, 1959. Plant 5 feet high, compact and erect, bearing flower stems 16 to 18 inches long. Flowers 6½ to 7 inches diameter, Phlox Purple (H.C.C. between 632 and 632/1). [148]

GOUVERNEUR GRUSLIN. (Raised by M. L. Doumont, Belgium, introduced and sent by Mr. Stuart Ogg.) **H.C.** September 11, 1959. Plant 4 feet high, compact and erect, bearing flower stems 12 to 15 inches long. Flowers 5¾ to 6¼ inches diameter, a colour near Shrimp Red (H.C.C. 616/2),

outer half of floret overlaid Roseine Purple (H.C.C. 629/1), golden yellow at extreme base of floret. [141]

JENNIFER TOOME. (Raised, introduced and sent by Messrs. D. Bruidegom.) **H.C.** September 11, 1959. Plant 4 feet high, compact and erect, bearing flower stems 12 to 18 inches long. Flowers 7½ to 8 inches diameter, outer florets Roseine Purple (H.C.C. between 629/2 and 629/3), inner florets white, greenish white at base. [140]

SNOW MOUNTAIN. (Raised, introduced and sent by Messrs. Ludwig & Co., Hillegom, Holland.) **H.C.** August 7, 1959. Plant 4½ feet high, compact and erect, bearing flower stems 15 to 18 inches long. Flowers 6 to 6½ inches diameter, outer florets white, inner florets white, cream at base. [159]

Class IXC. Small-flowered Cactus

DORIS DAY. (Raised, introduced and sent by Messrs. C. S. Weyers & Sons, Leidschestraat 100, Hillegom, Holland.) **A.M.** August 7, 1959. Plant 3½ to 4 feet high, compact and erect, bearing flower stems 14 to 18 inches long. Flowers 5¼ to 5½ inches diameter, outer florets a velvety shade of Blood Red (H.C.C. 820), inner florets slightly deeper colour than outer (H.C. 1953). [168]

KLANKSTAD KERKRADE. (Raised and introduced by Messrs. D. Bruidegom, and sent by Mr. Vincent F. Parker.) **A.M.** August 21, 1959. Described R.H.S. JOURNAL, **84**, p. 238 (**H.C.** 1958). [162]

MAARSE'S GRACE. (Raised, introduced and sent by Messrs. K. Maarse Dzn. Jr., Uiterweg 32, Aalsmeer, Holland.) **A.M.** September 11, 1959. Plant 3½ to 4 feet high, compact and erect, bearing flower stems 12 to 15 inches long. Flowers 5½ inches diameter, outer florets Phlox Pink (H.C.C. 625/1), inner florets very slightly deeper colour (**H.C.** 1952). [175]

HOEK'S YELLOW. (Raised by Mr. L. A. Hoek, Clingendaal 12, Den Haag, Holland, introduced and sent by P. W. Miller, Esq., 5 Pownall Gardens, Hounslow, Middlesex.) **H.C.** August 21, 1959. Plant 4½ feet high, compact and erect, bearing flower stems 18 to 20 inches long. Flowers 6 inches diameter, a clear yellow colour near Primrose Yellow (H.C.C. 601/1). [108]

LOYALTY. (Raised, introduced and sent by Messrs. K. Maarse, Dzn. Jr.) **H.C.** August 21, 1959. Plant 4 to 5 feet high, compact and erect, bearing flower stems 14 to 16 inches long. Flowers 5 to 5½ inches diameter, Orchid Purple (H.C.C. between 31/1 and 31/2). [171]

Class XI. Decorative Dwarf Bedding

FRED WETZLER. (Raised by van Einsiedel, Zernsdorf, East Germany, and sent by C. G. Medlen, Esq., 24 Claygate Lane, Hinchley Wood, Esher, Surrey.) **H.C.** September 11, 1959. Plant 28 to 30 inches high, compact and erect, bearing flower stems 10 inches long. Flowers 3½ to 4 inches diameter, a rich glowing shade of Orient Red (H.C.C. 819). [228]

RED IMP. (Raised, introduced and sent by Messrs. D. Bruidegom.) **H.C.** August 7, 1959. Plant 24 inches high, compact and erect, bearing flower stems 10 inches long. Flowers 3½ to 3¾ inches diameter, a shade near Capsicum Red (H.C.C. 715) colour fading slightly on outer florets. [227]

The following varieties were also grown in the trial of dwarf bedding dahlias.

Class IXD. Miniature-flowered Cactus

PARK PRINCESS. (Raised, introduced and sent by Messrs. K. Maarse Dzn. Jr.) **H.C.** August 7, 1959. Plant 30 to 34 inches high, compact and

erect, bearing flower stems 8 to 12 inches long. Flowers 4½ to 5 inches diameter, Fuchsine Pink (H.C.C. 627/2), extreme inner florets white. [217]

Class VID. Miniature-flowered Decorative

MARY GRAINGER. (Raised, introduced and sent by Messrs. Alex Lister & Son Ltd., The Nurseries, Rothesay, Bute, Scotland.) **H.C.** August 21, 1959. Plant 36 inches high, compact and erect, bearing flower stems 12 to 14 inches long. Flowers 3¼ to 3½ inches diameter, a colour near Chrome Yellow (H.C.C. 605). [211]

WEE JEAN. (Raised, introduced and sent by Messrs. Alex Lister & Son Ltd.) **H.C.** August 7, 1959. Plant 30 to 36 inches high, compact and erect, bearing flower stems 7 to 10 inches long. Flowers 2¾ to 3 inches diameter, outer florets white, inner florets creamy white. [204]

WHITE ONIONS

Thirty stocks of white onions were received for trial at Wisley in 1959. The trial was sown on April 22, 1959, after the seed had been treated with 50 per cent Dieldrin at the rate of 1½ ounces per pound of seed to control onion fly (*Delia antiqua*). The seed was sown in shallow flat-bottomed drills 3 inches wide and the seed was broadcast in the drills. The drills were spaced 9 inches apart. No thinning was carried out during the cultivation of the trial. The trial was grown on a plot which had been manured during 1958 and no manure or fertilizers were applied for the trial of white onions.

The trial was inspected by a sub-committee of the Fruit and Vegetable Committee on September 8, 1959, and on its recommendation the Council has made the following awards to white onions.

The number in brackets after the description of the variety was that under which it was grown in the trial.

SILVER SKINNED IMPROVED. (Raised, introduced and sent by Messrs. D. T. Brown & Co. Ltd., Poulton-le-Fylde, Lancs.) **A.M.** September 8, 1959. Plant 5 to 6 inches high, vigorous, healthy. Bulbs ¾ to 1 inch diameter, ⅝ to ¾ inch deep, globular, very regular, solid, outer skin white, flesh white. [15]

SOUTHPORT WHITE GLOBE IMPROVED. (Raised and sent by Messrs. Pieters-Wheeler Seed Co., P.O. Box 217, Gilroy, California, U.S.A.) **A.M.** September 8, 1959. Plant 11 to 12 inches high, vigorous, healthy. Bulbs 1½ to 1⅝ inches diameter, 1⅜ inches deep, globular, very regular, solid, outer skin white, flesh white. [30]

VAUGIRAUD IMPROVED. (Raised, introduced and sent by Messrs. Vilmorin-Andrieux S.A., 4 Quai de la Mégisserie, Paris, France.) **A.M.** September 8, 1959. Plant 9 to 10 inches high, very vigorous, healthy. Bulbs 1¼ inches diameter, ⅞ inch deep, flat-round, regular, solid, outer skin white, flesh white. [7]

WHITE EBENEZER IMPROVED. (Raised and sent by Messrs. Pieters-Wheeler Seed Co.) **A.M.** September 8, 1959. Plant 11 to 12 inches high, very vigorous, very healthy. Bulbs 1 to 1¼ inches diameter, ⅞ to 1 inch deep, flattened globe, regular, solid, outer skin white, flesh white. [25]

WHITE PORTUGAL. (Sent by Messrs. Watkins & Simpson Ltd., 27/29 Drury Lane, Covent Garden, London, W.C.2.) **A.M.** September 8, 1959. Plant 11 to 12 inches high, very vigorous, very healthy. Bulbs 1⅛ to 1¼ inches diameter, ¾ to 1 inch deep, flattened globe, regular, solid, outer skin white, flesh white. [19]

WHITE PORTUGAL IMPROVED. (Raised, introduced and sent by Messrs. D. T. Brown & Co. Ltd.) **A.M.** September 8, 1959. Plant 11 to 12 inches high, very vigorous, very healthy. Bulbs 1 to 1⅛ inches diameter, ¾ to ⅞ inch deep, flattened globe, regular, solid, outer skin white, flesh white. [22]

WHITE PORTUGAL IMPROVED. (Sent by Messrs. J. L. Clucas Ltd., Ormskirk, Lancs.) **A.M.** September 8, 1959. Plant 11 to 12 inches high, very vigorous, very healthy. Bulbs 1⅛ to 1¼ inches diameter, ⅞ to 1 inch deep, flattened globe, regular, solid, outer skin white, flesh white. [20]

WHITE PORTUGAL RESELECTED. (Raised and sent by Messrs. Hurst & Son Ltd., Kelvedon House, 60/64 Artillery Lane, London, E.1.) **A.M.** September 8, 1959. Plant 11 to 12 inches high, very vigorous, very healthy. Bulbs 1 to 1¼ inches diameter, ⅞ inch deep, flattened globe, regular, solid, outer skin white, flesh white. [21]

EARLIEST-SILVERSKIN PICKLING IMPROVED. (Raised, introduced and sent by Messrs. Sluis Brothers Ltd., P.O. Box 22, Enkhuizen, Holland.) **H.C.** September 8, 1959. Plant 5 to 6 inches high, vigorous, healthy. Bulbs ¾ to ⅞ inch diameter, ¾ inch deep, globular, regular, solid, outer skin white, flesh white. [13]

EXTRA EARLY MALAKOFF. (Raised, introduced and sent by Messrs. L. Clause S.A., Bretigny-sur-Orge, France.) **H.C.** September 8, 1959. Plant 9 to 10 inches high, very vigorous, healthy. Bulbs 1½ inches diameter, 1 inch deep, flat-round, regular, solid, outer skin white, flesh white. [6]

NEW QUEEN. (Raised by the late Alfred Watkins, introduced and sent by Messrs. Watkins & Simpson Ltd.) **H.C.** September 8, 1959. Plant 10 to 11 inches high, very vigorous, healthy. Bulbs 1¼ inches diameter, 1 inch deep, flat-round, regular, solid, outer skin white, flesh white. [16]

PARIS SILVERSKIN IMPROVED. (Raised, introduced and sent by Messrs. Vilmorin-Andrieux S.A.) **H.C.** September 8, 1959. Plant 10 to 11 inches high, very vigorous, healthy. Bulbs 1¼ inches diameter, ⅞ inch deep, flat-round, regular, solid, outer skin white, flesh white. [9]

PARISIAN SPRING. (Raised, introduced and sent by Messrs. Vilmorin-Andrieux S.A.) **H.C.** September 8, 1959. Plant 7 inches high, vigorous, healthy. Bulbs 1⅛ inches diameter, ¾ inch deep, flat-round, regular, solid, outer skin white, flesh white. [12]

SILVER-SKINNED BUNCHING IMPROVED. (Sent by Messrs. J. L. Clucas Ltd.) **H.C.** September 8, 1959. Plant 11 inches high, very vigorous, very healthy. Bulbs 1⅛ to 1¼ inches diameter, ⅞ to 1 inch deep, flat-round to flattened globe, regular, solid, outer skin white, flesh white. [24]

WHITE PORTUGAL IMPROVED. (Raised and sent by Messrs. Pieters-Wheeler Seed Co.) **H.C.** September 8, 1959. Plant 9 to 10 inches high, vigorous, healthy. Bulbs 1 to 1¼ inches diameter, ⅞ inch deep, flat-round to flattened globe, regular, solid, outer skin white, flesh white. [23]

WHITE SPANISH JUMBO IMPROVED. (Raised and sent by Messrs. Pieters-Wheeler Seed Co.) **H.C.** September 8, 1959. Plant 12 to 13 inches high, very vigorous, very healthy. Bulbs 1 to 1¼ inches diameter, 1¼ inches deep, cocoa-nut shaped, regular, solid, outer skin white, flesh white. [28]

BRUSSELS SPROUTS

Eighty-three stocks of Brussels sprouts were received for trial at Wisley during 1959. The trial was sown on March 3, 1959, and the resulting seedlings were planted out on May 22, 1959. The plants were spaced 3 feet apart each way.

The trial was inspected by a sub-committee of the Fruit and Vegetable Committee on October 15 and November 5, 1959, and on its recommendation the Council has made the following awards to Brussels sprouts.

The number in brackets after the description of the stock is that under which it was grown in the trial.

FASKO. (Raised, introduced and sent by Messrs. Gebr. Broersen's, Harenkarspel (post Tuitjenhorn), Holland.) **A.M.** October 15, 1959. Plant 2 feet 8 inches high, 2 feet 1 inch spread, vigorous, very compact; foliage medium size, dark green. Sprouts 1⅛ inches diameter, 1 7/16 inches long, fairly tightly placed, medium green, long standing. Crop heavy, very uniform. [52]

MARNESTER. (Raised by M.Th. Vos, introduced and sent by Messrs. Selectiebedrijf Luidenburg, Werfstraat 6, Groningen, Holland.) **A.M.** October 15, 1959. Plant 2½ feet high, 1¾ feet spread, vigorous, compact; foliage large, light green. Sprouts 1 1/16 inch diameter, 1⅜ inches long, fairly tightly placed, medium green, long standing. Crop heavy, very uniform. [31]

ROODNERF IMPROVED. (Raised, introduced and sent by Messrs. Sluis Bros Ltd., P.O. Box 22, Enkhuizen, Holland.) **A.M.** November 5, 1959. Plant 2¾ to 3 feet high, 2 to 2½ feet spread, vigorous, compact; foliage fairly large, grey green. Sprouts 9/10 to 1 inch diameter, 1 3/10 inches long, fairly tightly placed, medium green, long standing. Crop heavy. [51]

SYSTON FREEZER. (Raised, introduced and sent by Messrs. Harrisons & Sons (Leicester) Ltd., St. James's Street, Leicester.) **A.M.** October 15, 1959. Plant 2¾ feet high, 2 feet 1 inch spread, vigorous, compact; foliage large, dull grey green. Sprouts 1 inch diameter, 1 5/16 inches long, fairly loosely placed, medium green, fairly long standing. Crop heavy. [79]

BINTREE. (Raised by Dr. C. D. R. Dawson, introduced and sent by Messrs. A. L. Tozer Ltd., Pyports, Church Street, Cobham, Surrey.) **H.C.** November 5, 1959. Plant 2½ feet high, 2¼ to 2½ feet spread, vigorous, compact; foliage large, bluish green. Sprouts 1¼ to 1 3/10 inches diameter, 1 7/10 inches long, fairly tightly placed, medium green, long standing. Crop heavy. [48]

CLIMAX RESELECTED. (Raised and sent by Messrs. Hurst & Son Ltd., Kelvedon House, 60/64 Artillery Lane, London, E.1.) **H.C.** October 15, 1959. Plant 2¼ feet high, 1 foot 10 inches spread, vigorous, compact; foliage fairly large, light grey green. Sprouts 2¼ inches diameter, 1½ inches long, tightly placed, light to medium green, fairly long standing. Crop good. [6]

CLUSEED DWARF WONDER. (Raised, introduced and sent by Messrs. J. L. Clucas Ltd., Ormskirk, Lancs.) **H.C.** October 15, 1959. Plant 2 feet high, 15 inches spread, vigorous, very compact; foliage medium size, medium green. Sprouts 1⅜ inches diameter, 1¼ inches long, tightly placed, medium green, fairly long standing. Crop good. [4]

CLUSEED IDEAL FREEZER. (Raised by Mr. T. W. Clucas, introduced and sent by Messrs. J. L. Clucas Ltd.) **H.C.** November 5, 1959. Plant 3¼ to 3½ feet high, 2¼ to 2½ feet spread, vigorous, compact; foliage large, dark green. Sprouts 1 to 1 1/10 inches diameter, 1⅜ inches long, fairly tightly placed, light medium green, long standing. Crop heavy. [74]

GLORY OF CASTRICUM IMPROVED. (Raised, introduced and sent by Messrs. Wed P. de Jongh Ltd., Frans de Hollanderlaan 25, Goes, Holland.) **H.C.** October 15, 1959. Plant 2¼ feet high, 20 inches spread, vigorous, compact; foliage medium size, dull grey green. Sprouts 1 1/16 inches diameter, 1 7/16 inches long, fairly loosely placed, medium green, fairly long standing. Crop good. [73]

HAROLA. (Raised, introduced and sent by Messrs. Gebr. Broersen's.) **H.C.** October 15, 1959. Plant 2¾ feet high, 2 feet 1½ inches spread, vigorous, compact; foliage large, medium green. Sprouts 1½ inches diameter, 1½ inches long, fairly loosely placed, medium green, fairly long standing. Crop good. [53]

MASTERPIECE. (Raised, introduced and sent by Messrs. D. T. Brown & Co. Ltd., Poulton-le-Fylde, Lancs.) **H.C.** November 5, 1959. Plant 2½ feet high, 2 feet spread, vigorous, compact; foliage large, dull bluish grey green. Sprouts 1¼ to 1½ inches diameter, 2¾ inches long, fairly tightly placed, light to medium green, long standing. Crop good. [40]

PARIS MARKET IMPROVED. (Raised, introduced and sent by Messrs. Vilmorin-Andrieux S.A., 4 Quai de la Mégisserie, Paris, France.) **H.C.** October 15, 1959. Plant 2¼ feet high, 20 inches spread, vigorous, compact; foliage fairly small, dull grey green. Sprouts 1⅝ inch diameter, 1 3/16 inches long, fairly tightly placed, medium green, long standing. Crop good. [49]

ROSNY IMPROVED. (Raised, introduced and sent by Messrs. L. Clause S.A., Bretigny-sur-Orge, France.) **H.C.** October 15, 1959. Plant 3 feet 7 inches high, 2 feet spread, very vigorous, compact; foliage large, dark dull green. Sprouts 1⅛ inches diameter, 1 7/16 inches long, loosely placed, medium green, long standing. Crop good. [82]

SUTTON'S MARKET REARGUARD. (Raised, introduced and sent by Messrs. Sutton & Sons Ltd., Market Place, Reading, Berks.) **H.C.** November 5, 1959. Plant 2½ to 2¾ feet high, 2 to 2¼ feet spread, vigorous, compact; foliage large, bluish dark green. Sprouts 1 1/10 to 1 3/10 inches diameter, 1⅜ inches long, fairly tightly placed, medium green, long standing. Crop heavy. [45]

WESTLANDIA IMPROVED. (Raised and sent by Messrs. Corns. van Beusekom, Westerkade 2, Utrecht, Holland.) **H.C.** November 5, 1959. Plant 2¼ feet high, 2¼ feet spread, vigorous, compact; foliage large, dark green. Sprouts 1 to 1 1/10 inches diameter, 1⅜ inches long, fairly tightly placed, light to medium green, long standing. Crop good. [55]

WESTLANDSE IMPROVED. (Sent by Messrs. Co-op. Zaaizaadvereniging West-Friesland W.A., Wijdenes, Holland.) **H.C.** November 5, 1959. Plant 2½ to 2¾ feet high, 2¼ feet spread, vigorous, compact; foliage medium size, dark grey green. Sprouts 9/10 to 1 inch diameter, 1⅛ inches long, tightly placed, medium green, long standing. Crop good. [56]

FELLOWS WISHING TO OBTAIN PLANTS RARE IN CULTIVATION

Phlox nana ensifolia (*P. mesolenca*)	Miss M. B. Garrans, 18 Broad Lane Hampton-on-Thames, Middx.
Hybrid Caladiums, *Alocasias* (seed only)	Norman Sutherst, P.O. 198, Nairob Kenya.
Celmisia monroi	Mrs. Wilfred Brownlow, Ettington Grange, Stratford-upon-Avon.
Camellia species other than *C. japonica* or *C. sasanqua*	G. L. Parkhurst, 1075 Winsor Avenue, Piedmont 10, California, U.S.A.

Cobaea scandens 'Variegata', Dianthus 'Napoleon III', *Lobelia laxiflora*, Lobelia 'The Test'	D. D. Dawson, 36 Cross Street, Ware, Herts.
Iris foetidissma yellow-berried form	T. R. Peace, Woodlands, Tilford, Nr. Farnham, Surrey.

PLANTS TO WHICH AWARDS HAVE BEEN MADE IN 1959 and 1960

Begonia 'Apricot Beauty' A.M. December 1, 1959. A very attractive free-flowering variety of neat habit. It has been in cultivation for at least forty years. Its profusion of double flowers measuring 2 inches across are coral pink (H.C.C. 0619) when fully open but of a pleasing deeper shade in bud and at the margins. There is some doubt as to its origin but it is thought to be a variety of *Begonia hiemalis*. Shown by the County Borough of Brighton Parks and Gardens Department (Superintendent, Mr. J. R. Evison, N.D.H.), Moulsecoomb Place, Brighton 7.

Camellia tsaii A.M. February 9, 1960, as a flowering shrub for the cool greenhouse. This species, native to Western China, can only be grown in a cool greenhouse in all but the most sheltered parts of this country. The shining, dark green leaves are narrowly oblong-lanceolate, caudate and serrulate, about 3½ inches long and an inch wide, with noticeably undulate margins. The five-petalled, glistening white flowers are about an inch across, becoming somewhat flattened with age. Exhibited by The Crown Estate Commissioners, Windsor Great Park, Berks.

Hamamelis mollis 'Brevipetala' A.M. February 9, 1960. This variety of the common witchhazel bears numerous clusters of flowers with rather crimped, narrow petals about ½ inch long which are blunted and notched at the ends. The flowers are Buttercup Yellow (H.C.C. 5) in colour and are very sweetly scented. Exhibited by The Crown Estate Commissioners, Windsor Great Park, Berks (Fig. 58).

Narcissus cantabricus subsp. cantabricus var. petunioides F.C.C. February 23, 1960, as a variety for cultivation in pots, pans or bowls. Division X, wild form. Stem 4 inches long; flower 1¾ inches diameter; perianth segments $\frac{7}{16}$ inch long, $\frac{1}{8}$ inch wide, flat, slightly reflexed, regular, pointed, white; corona 1½ to 1¾ inches diameter, ½ inch long, saucer-shaped, mouth straight and frilled, margins crenate, white. Shown by Messrs. D. & J. W. Blanchard, Wilverley, Blandford, Dorset (Fig. 59).

BOOK NOTES

"A Chalk Garden." By F. C. Stern. 179 pp. Illus. (Nelson.) 30*s*.

This book will be a necessity for anyone who is attempting to garden on chalk. It tells the story of fifty years' pioneering work by Sir Frederick and Lady Stern, who have created one of England's most beautiful gardens at Highdown on the southern slopes of the South Downs. Starting from scratch, half a century ago, with only a disused chalk pit and some evergreen oaks to build on, they have produced a garden to which horticultural pilgrims come from all over the world. By a process of trial and error they have discovered the plants that will not only tolerate, but even rejoice in a chalk soil; and not content with that they have by their skilful matchmaking added substantially to the best that nature provided. The reader will find an index of ten pages of double columns containing the names of the plants that have been tried, generally with success, by Sir Frederick and Lady Stern over the years.

I commend it to those in search of ideas of suitable plants for a garden on an alkaline soil. From the index a reference to the text will provide a wealth of information about any plant drawn not only from Sir Frederick's great experience of horticulture and plants, but also from his not inconsiderable acquaintance with the ancillary sciences of taxonomy and cytology. The only notable absentee from that list that I could find was the Sweet Box (or *Sarcococca*, to give it its botanical name), which is not to be despised among winter-flowering evergreens that flourish on the chalk.

The late Mr. E. A. Bowles in his great trilogy walked us round the garden at Myddelton House season by season. Sir Frederick and Lady Stern take us round their garden month by month pausing now and again to insert a chapter devoted exclusively to their favourite genera of roses, and lilies. We are introduced to each plant that is noteworthy in that month with delightful conversational details about its habits and where it came from, all of which gives one the feeling of walking round with the author himself; or at least of listening to one of his inimitable lectures illustrated by the very fine coloured photographs which he is so skilful at taking, and of which a number are reproduced in this book.

L. PALMER

"Plant Growth Substances." By L. J. Audus. 8vo. Pp. 414 + 139 glossary and appendices. Ill. (Leonard Hill Ltd.) 65*s*.

The first edition of this book on plant-growth substances was published in 1953 and a short review appeared in this journal. The primary purpose of that work was to consider the relationship of recently acquired knowledge of plant-growth substances with the established principles of plant physiology and, secondly, to assess the value of the application of such substances in horticulture and agriculture.

The recently published second edition—considerably larger and heavier—maintains the same general design and purpose, but during the interval many important further additions to knowledge have been made, and more extensive practical applications have followed in their industrial use; for example, the large-scale chemical manufacture of selective weedkillers has enabled many thousands of acres of cereals to be sprayed with one of the effective substances available in so many proprietary formulations.

A new chapter has been included, admittedly written for plant pathologists, and concerned with the mechanism of the action of the natural auxins in accelerating the growth of plant cells, and also with the multiple physiological reactions that may well be so involved, but of these "no comprehensive explanation can yet be given".

Recently acquired knowledge of the chemical control of sexual reproduction in certain comparatively simple fungi, and in other simple plants, by minute traces of hormonal-like substances has shown how complex these reactions must be. Such progress has necessitated the enlargement and rewriting of the chapter on hormones and reproduction. Similarly, revision has been necessary of the chapters dealing with the growth of specific organs of the flowering plants. Recent work on complementary growth factors, such as the Gibberellins is brought under review in this edition; the photos (plates 6 and 28) and the graph (fig. 5) must arouse the curiosity, if not the genuine interest, of even the most casual reader to learn more about the effect of such substances on our common garden plants, on their growth in length and on their development.

In tabular form the author provides a glossary of terms frequently used in the text, a lengthy appendix shows the response of cuttings, by acceleration of rooting, of very many horticultural plants to synthetic growth substances; another appendix presents information on the influence of auxins on the setting of tomato fruits and yet another on the parthenocarpic fruits of other plants induced chemically. In an extensive appendix (D) of some 24 pages, are presented lists of crop and ornamental plants and common weeds, and an assessment of their degree of sensitivity to selective weedkillers as observed in different regions of the world. A further table shows the responses of a few English and rather more North-American apple varieties to spraying to prevent pre-harvest drop of the fruits. Finally, there is a most valuable selected bibliography extending to some 63 pages and listing some fifteen hundred or so references to original work, followed by a very good index.

The author, therefore, has most industriously made a major contribution to the British literature concerned with this branch of pure and applied plant physiology which continues to grow and develop so rapidly.

M. A. H. TINCKER

"The Orchids. A Scientific Survey." Ed. C. L. Withner. 648 pp. (Ronald Press Co., New York, 1959.) $14.

This book consists of chapters on various aspects of the subject by sixteen authors. Chapter headings are: Introduction and History of Orchid Culture; Classification of Orchids; Developmental Anatomy of an Orchid; Aspects of Variation in the Orchidaceae; Embryology and Development in the Orchidaceae; Orchids and Cytology; Hybridization and Inheritance in Orchids; Orchid Physiology; Mycorrhiza in Orchids; Photo-periodic and Temperature Responses of Orchids; Fungal and Bacterial Diseases of Orchids; Virus Diseases of Orchids; Orchid Pests and their Control; Vanilla, the Orchid of Commerce. There are appendices giving a key to sub-tribes (not to genera) of orchids; a list of chromosome numbers; data on culture media and on techniques for chromosome counts. Indexes occupy 44 pages. All chapters have illustrations, but almost all of these are copied from previous publications.

In the main, this is a book about orchids as greenhouse plants, written by residents in North Temperate Regions. There is little about the behaviour of orchids, either in the wild or in cultivation, in the tropics, and references to such subjects are often not well-informed. For example, gregarious flowering is by no means confined to *Dendrobium crumenatum*, and Coster's experimental work on the subject is not mentioned. The other major omission from the book is the subject of geographical distribution.

The only chapter written outside of North America, by Prof. H. Burgeff, on mycorrhiza, is a summary, for the first time in English, of the work and thought of a lifetime; Prof. Burgeff published his first paper on the subject in 1909.

The other author who has devoted a lifetime to the study of orchids is Mr. Charles Schweinfurth, who contributes the chapter on classification (in the main, a historical survey) and the key to the sub-tribes which forms the first appendix. This latter is a translation of Schlechter's key of 1926, with minor alterations. Mr. Schweinfurth considers this to be "the most practical key for the use of present-day orchidologists", and he may be right; but to the present reviewer it seems that the key is in many respects unnatural, and that some radical new thought on orchid classification is long overdue.

The chapter by Mrs. Helen H. Adams, on aspects of variation, consists mainly of an uncritical copying of drawings (of varying degrees of excellence) from various sources; these contain several errors, and there has been no attempt to revise names in accordance with modern generic concepts. In general, the drawings show to what a remarkable degree similar forms have evolved on different evolutionary lines in the family, but there has been no attempt to show examples of variations of one pattern within a close natural alliance. Among various questionable statements, Mrs. Adams writes (p. 78), "it would seem that the terms Diandrae and Monandrae can only be considered 'artificial' and not 'natural'," whereas on the same page she quotes a recent paper on the comparative anatomy of orchids flowers in which the naturalness of these two groups is once more vindicated.

Another example of uncritical copying is in the chapter on hybridization (p. 277), where it is indicated that a cross between *Phaius* and *Cymbidium* is possible. There can be no doubt that this cross was never actually made, and that the alleged *Phaicymbidium* exhibited in 1902 was in fact a pure *Phaius* hybrid (see Rolfe in *Orchid Review*, 19, p. 296, 1911).

R. E. HOLTTUM

"Tree-Fruit Production." By J. S. Shoemaker and B. J. E. Teskey. Demy 8vo. 456 pp. Illus. (John Wiley, New York; Chapman and Hall, London.) 56*s*.

This book, being an American work, contains much that is not applicable to the British Fruit Growing Industry, the conditions of which differ so markedly from those prevailing in N. America. It takes the form of separate monographs on each of the principal tree-fruits and deals with them, to some extent, in isolation. Cherries are dealt with in much more detail than we usually find and peaches, in N. America a very important fruit, have a very large section. Citrus, apricots, plums, quinces and pears have their share of attention, but most space is devoted to the apple.

The authors cover every aspect of the industry from planning the orchard to the preparation of the fruit for market; were the conditions similar in the two continents, the book could be strongly recommended both to growers and students. As it is, it could be of interest to British growers, who may well find in it ideas of value to them in their own operations.

It deals in particular detail with the apple, discussing the effects on cropping and on quality of environment, pollination and cultural treatments and detailing the pests and diseases which affect this fruit. There are several references to fire-blight in pears, stressing the importance of restricting the vigour of the tree.

A section is devoted to dwarf apples and pears, suggesting that American growers are becoming interested in this form of production. They find the fruit from dwarf trees to be of higher quality than that on standard trees, but in the colder districts the Malling stocks sometimes suffer winter injury. They suggest a spacing of 35 × 35 feet for M.I. and M.II, which would to us seem excessive.

The book is admirably produced with a number of illustrations, adequate cross-headings and noticeable freedom from misprints. A most exhaustive bibliography will be of assistance to readers wishing to follow up any particular topic of special interest.

T. NEAME

"Melchior Treub." By H. H. Zeijlstra. 128 pp. Illus. Koninklijke Instuut voor de Tropen, Amsterdam. 14*s*.

Dr. Melchior Treub was Director of the Botanic Garden at Buitenzorg (Bogor) in Java from 1880 to 1909, and also founder of the Department of Agriculture of the Netherlands Indies, of which he was Director from its establishment in 1904. He was outstanding as an original investigator, as a pioneer of the application of science to tropical agriculture, and as an administrator. The centenary of his birth was commemorated by the Royal Tropical Institute of Amsterdam in 1951, and the present book was originally planned for publication at that time; the author is one of Treub's few surviving colleagues. The book is published in English, and consists of a short biography which gives a vivid impression of a very full and successful life lived under many difficulties, not the least of which was frequent ill-health, leading to Treub's death only a year after his retirement. He was first and foremost a scientist, realizing the importance and the international character of fundamental research, but realizing also (as contemporary officials often did not) the great need for research in the application of knowledge so acquired to tropical agriculture. He attracted to Buitenzorg scientists from many countries; and today at Bogor, in the Treub laboratory erected to his memory, visiting scientists may still feel the impact of his personality.

R. E. HOLTTUM

"Cacti and Other Succulents." By Edgar Lamb. 580 pp. Illus. (Blandford Press.) 45*s*.

Edgar Lamb's second volume of his *Illustrated Reference on Cactus and Succulent Plants* is a useful addition to the literature available on this subject. As was the case in his first volume, the photographs are good, and his methods of presentation show the plants off to the best advantage. They are artistically arranged and, at the same time, one is able to study the particular characteristics of each plant.

Mr. Lamb has incorporated some valuable information about his plants, and my only regret is that he has not given a more detailed technical description of them, to enable collectors to compare the written word with the photograph, when using the book to identify their own plants.

The coloured photographs are a valuable part of the book. The plants have been well arranged and the composition of the photographs is excellent. We still have a long

way to go in the reproduction of colour in plants, and one misses the brilliance of the gold and bright reds. But the colours are good and true to life, with the possible exception of some of the blue plants, which are still one of the photographer's chief problems.

I enjoyed the notes at the end of the book on the Exotic Collection and I was interested to read that many of the plants are grouped according to the countries of origin, and are set out in rocks and ground resembling the terrain of their natural habitat. This is a valuable contribution to the study of succulent plants in cultivation in England, which is, I am sure, much appreciated by Mr. Lamb's many visitors.

The book is well produced and will be an asset to the library of collectors, and perhaps in particular to those who specialize in general collections of several genera.

OLIVER LEESE

"Handbuch der Laubgehölze in zwei Bänden." By Gerd Krüssmann. Vol. (Band) 1, Part (Heft) 1. 96 pp. Large 8vo. Illus. (Verlag Paul Parey, Berlin & Hamburg; 1959.) 18.60 DM. (subscription price per part).

The German term "Laubgehölze" covers all kinds of woody plants, deciduous and evergreen, dicotyledonous and monocotyledonous, other than gymnosperms (Nadelgehölze). Krüssmann's descriptive alphabetically arranged survey of such trees and shrubs cultivated in Europe will occupy when completed some 900 pages of text, with 300 of plates. The publication plan is for issue in 12 quarterly parts at 18.60 DM. (approx. 30*s*. Sterling) each; on completion of the two volumes the price will be raised by 10 per cent above the subscription rate. Judging from the first part, this Handbuch promises to be a worthy successor of the great German dendrologies by Karl Koch, Dippel, Koehne and C. K. Schneider, all of which were prepared before the great inflow of new plants from China during the present century. The first part contains a very useful illustrated glossary, in which the mathematically based Kew terminology for leaf-shapes (cf. R.H.S. *Dict. Gard. Suppl.* 320–321) is made available in German for the first time; this is followed by a list of botanical authors and gardeners, an explanation of abbreviations, a map of climatic zones and the beginning of the main text, which describes trees and shrubs from *Abelia* to *Acer*. Synopses of the species are given under some genera, but dichotomous keys, such as make Rehder's *Manual* and Boom's *Nederlandse Dendrologie* so useful, are unfortunately lacking. This deficiency is partly, but far from completely, met by the numerous illustrations which are from line-drawings, some copied but many original, and from photographs. Among the latter it is interesting to see "nature-printed" leaf-impressions portraying general outline and veining. Bradbury, Ettinghausen, Pakorny, Cusin and Ansberque employed them very effectively for the same purpose last century and although Krüssmann's do not equal in fine detail, on account of reduced size, those of his predecessors, they accurately and helpfully supplement his text.

W. T. STEARN

The following books have been received:—

"101 American Wild Flowers." By Jewell Casey. Cr. 8vo. Illus. 101 pp. (Vintage Press, 120 W. 31st Street, New York 1, U.S.A.) $3.

Direct Sowing Experiments in Scotland and Northern England." By M. V. Edwards, J. W. L. Zehetmayr and W. W. Jeffrey. 23 pp. (Forestry Commission.)

"First Gardener's Report Compost, Comfrey and Green-Manure." by Lawrence D. Hills. 28 pp. Illus. (The Landsman's Bookshop, Llangollen, N. Wales.) 1*s*. 6*d*.

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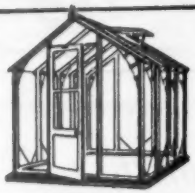

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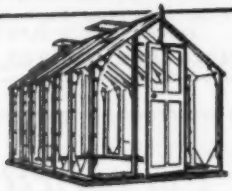

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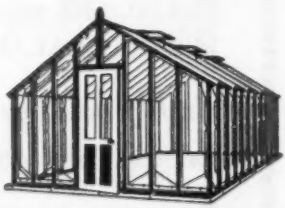

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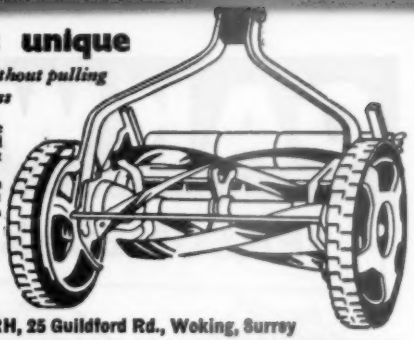

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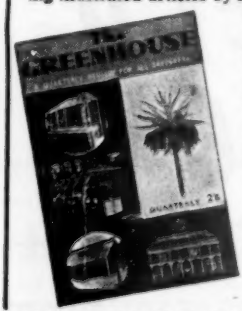

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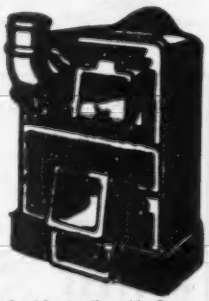

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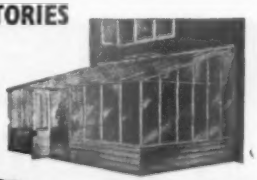

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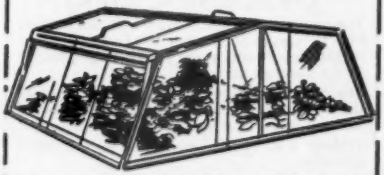

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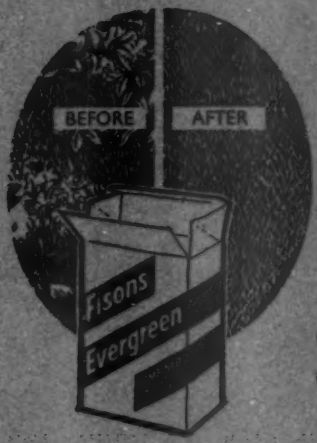

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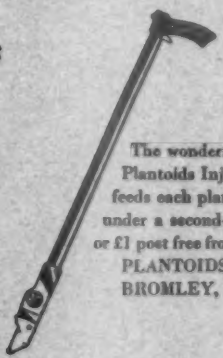

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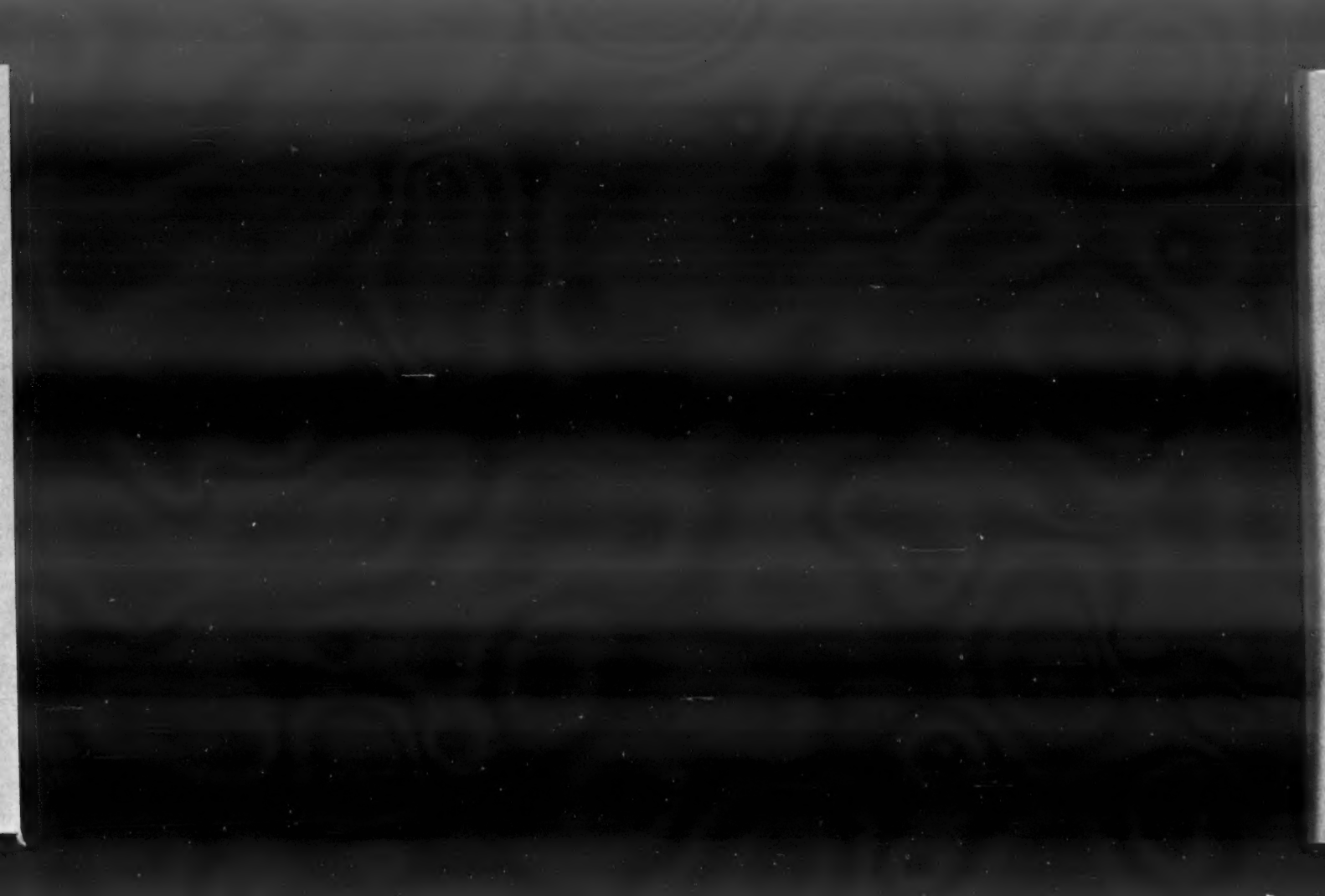
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